

# ESSAYS IN TRANSPORTATION

IN HONOUR OF W. T. JACKMAN

Edited by  
H. A. INNIS

With a Foreword by  
THE HON. AND REV. H. J. CODY



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## FOREWORD

WHEN a University teacher retires from active service, by reason of the passing of the years, no more fitting tribute to his character, influence, and work can be devised than a published volume of lectures on the various phases of the subject to which he has devoted the main energies of his life. This volume is such a tribute to Professor W. T. Jackman after twenty-five years of service to the Department of Political Economy in the University of Toronto. He passed in due course through the various stages of the academic hierarchy. He was appointed a lecturer in 1915, an assistant professor in 1917, associate-professor of Rural Economics in 1921, professor of Rural Economics in 1926, and professor of Transportation in 1931. He also taught Corporation Finance from 1920 to 1931. As a teacher he was deliberate in speech, painstaking in the presentation of his theme, candid, fair, and yet decided in his personal conclusions. As a man he is kindly, courteous, and modest. He has given public expression to his convictions in books, speeches, and pamphlets with a vigour and definiteness which naturally called forth replies and counter-arguments from those who disagreed with his views. The two chief problems which he thus publicly discussed were the problem of railway consolidation in Canada and the problem of the St. Lawrence Waterway. These are of capital importance to our country and are with us still. All aspects of the solutions proposed and the issues involved should be placed by competent persons before Canadian citizens. Professor Jackman did his share in the exposition of the factors involved.

In arranging this series of lectures, an attempt has been made to recognize the wide range of his interests and to stimulate further investigation in his special field. The bibliography of his published works indicates the extent of his reading and research.

Professor Alexander Brady, a former student, and a colleague, has described his influence in the Department of Political Economy. Professor W. M. Drummond of the Ontario Agricultural College succeeded Professor Jackman in the teaching of rural economics in the Department before he was appointed head of the Department of Agricultural Economics at Guelph. Mr. Herbert Marshall of the Bureau of Statistics was a colleague before he was appointed to Ottawa. Mr. W. G. Scott was a student of Professor Jackman

before securing a graduate scholarship at the London School of Economics. Professor H. E. Dougall, also a student of Professor Jackman, has done important work at Northwestern University, Evanston, in the closely related fields of transportation and corporation finance—fields in which Professor Jackman lectured before concentrating his interests on transportation. Professor G. P. deT. Glazebrook of the Department of History, has shown the interrelations of history and political economy and has paid tribute to Professor Jackman's work in the *history* of transportation. Mr. Norman D. Wilson of the firm of Wilson and Bunnell represents the engineering profession, and Mr. F. L. Barton, chief of the Economics Section of the Tennessee Valley Authority, the complex field of rate regulation. Professor C. Lloyd Wilson of the Wharton School of the University of Pennsylvania presents in a broad and effective way the appreciation which American scholars entertain for Professor Jackman's monumental publications.

To all these lecturers I offer on behalf of the University of Toronto sincere thanks; and to Professor Jackman himself best wishes for a long evening of life, in which he can enjoy the delights of friendships, of good health, and of the pursuit of his favourite studies and hobbies.

The President's Office,  
The University of Toronto, 1941.

H. J. CODY

## INTRODUCTION

THE lectures in this volume are intended as a fitting tribute to Professor William T. Jackman who for twenty-five years in the University of Toronto made transportation a subject of major interest in the curriculum of Political Economy. As a scholar Professor Jackman rarely permitted himself to be diverted from a meticulous study of the problems of railways and transport, and those indebted to him for this unflagging application over the years are not merely his colleagues in the Department, and the many hundreds of students whose studies he carefully supervised, but also scholars far beyond the borders of Canada. For nearly a decade he laboured in the preparation of a two-volume treatise on *The Development of Transportation in Modern England*, published by the Cambridge University Press in 1916. The theme involved an intensive investigation of the development of roads and inland waterways in England from 1500 to 1830 and a careful account of the transition from canal and turnpike to the railway in the subsequent period. The task was one of great difficulty, for in many cases the information was unquarried, stored away in the dusty basements of navigation and canal companies. Research students will sympathize with Professor Jackman's sad complaint in his preface "that some who could have given invaluable aid, without any inconvenience to themselves or injury to the interests they represent, were antagonistic to granting any such service. For instance, the clerk of the most important navigation company whose headquarters are at the midland metropolis, when permission was requested to examine some of the freight bills before the year 1832, refused to allow any such privilege." But the indefatigable energy of the author in extracting information is manifest in every chapter, and not least in the painstaking and illuminating appendices. It is scarcely to be expected that he was generously recompensed in royalties, but he won the reward which a genuine scholar cherishes most, the sense of having accomplished work worthy of high commendation by fellow-toilers in the field and, in the words of a reviewer, "fit to stand beside the best works of its kind." Twenty-five years after publication the book is still ranked among the select studies of the subject, being often quoted, for example, by one who has spent a lifetime exploring the economic history of the same period, Professor J. H. Clapham of Cambridge.

Professor Jackman's two subsequent and separate volumes on the economics of transportation with reference to Canada are more narrowly specialized.\* They are concerned mainly with the principles of rate-making and the diverse influences which determine rate structures. In the examination of such problems in Canada these volumes occupy a lone and unchallenged position, and in the extensive American literature of the subject hold a foremost place. Professor Jackman has been fearless in expressing opinions on public policy in regard to transportation, and the popularity of a cause never seemed to him adequate reason why he should espouse it. He has not been reticent in pointing out weaknesses in the government management of railways, and he has been forthright in criticism of schemes for a deepened St. Lawrence Waterway. In these matters he did not slink behind a door to whisper disapproval, and consequently one has heard rumours of angered interests complaining of a professor's liberty of speech. He illustrates that the colour of one's social philosophy does not have to be red, or even pink, to raise the issue of academic freedom.

One must pay tribute to Professor Jackman not merely for integrity and thoroughness as a scholar and for a sincere and candid mind, but also for those kindly qualities which for a quarter of a century have made many students consider him as a friend. It is not easy for a university teacher to remember the young men and women who have sat in his classes because of the ceaseless inflow and outflow from year to year. But Professor Jackman is one of those rare teachers who can remember, and he has often revealed a lively interest in the careers of those who have grown up as undergraduates. We are certain that the many students of the past would gladly join with his colleagues in honouring him on retirement after twenty-five years of fruitful labour.

ALEXANDER BRADY

*Economics of Transportation* (1926) and *Economic Principles of Transportation* (1935).

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# NATIONALISM AND INTERNATIONALISM ON CANADIAN WATERWAYS

G. P. de T. GLAZEBROOK

AS waterways flow across the Canadian lands, sometimes broad and placid, sometimes narrow and forbidding, here continuous and there broken, so the influence of rivers and lakes on the development of Canada runs throughout its history; now facilitating and now thwarting the designs of men, encouraging their ambitions, challenging them to use what nature offers and to improvise where she is less kind. In peace and war, from the earliest recorded times to the present day, our inland waterways have consistently afforded a means of transportation—sometimes unrivalled, at other times overshadowed—but never ceasing to play a part. Transportation is too prosaic a word to represent such an essential, such a colourful role in the drama of Canadian history. The fabric of Canadian society—economic, social, and political—has been spun with transportation as a main thread. The life of the people, their prosperity, and the very boundaries within which they lived have been dictated in no small part by the facilities for the movement of men and goods. The exploits of the explorer risking the unmapped river, of the engineer blasting a path through the Rocky Mountains—these readily appeal to the imagination. But no less fascinating is it to attempt to construct a pattern out of a thousand such individual episodes, seen in the light of the accomplished plans and frustrated hopes of generations of men tied to the basic necessity of movement.

On any continent transport by water has characteristics which distinguish it from that by land. Rivers and lakes occupy set positions and offer fixed opportunities, to be modified only within narrow limits. In North America this generality has wide implications because of the contrast between the unique opportunities for travel by water and the handicaps to travel by land, as faced by a scanty population scattered over a large area. The history of the Canadian nation may profitably be studied in the light of the physical map of North America. The natural forces working against Canadian nationalism are readily apparent: the rock and mountain barriers

set across the road to the west are emphasized by the openings leading to the south. The St. Lawrence River sweeps north away from the Maritime Provinces, while the Red and Richelieu Rivers induce a north-and-south design. On the whole, however, the waterways formed the outline for a separate nation in the northern half of the continent. The immensely long line of rivers and lakes from Atlantic to Pacific made up the spine of the Canadian nation. Thus a potential national unity built on waterways might be read from the map. But it was potential and not inevitable. To stamp political boundaries over the physical map called for generations of planning and effort. In that process railways played a part, but it was largely an imitative or a complementary one. The waterways showed the direction and afforded the means of a realization of national ambition, but they also revealed the way in which it could be defeated. It was for the pioneers to solve the riddle of the waterways.

The grand design for the French empire in America was the product of heroic imagination, pursued with boldness and skill. This, the first of the plans to delimit the boundaries of Canada, resulted from a reading of the river systems combined with a capacity to adopt the methods of travel found in operation by the Indians. The French entered the continent by way of the St. Lawrence and the Great Lakes. From there they struck out in two directions: north-west to Lake Winnipeg and beyond; south-west to the Mississippi and down to the Gulf of Mexico. Both the trunk and the two branches were sprinkled with forts at strategic points, and communication was maintained by birch canoes, supplemented by dug-outs on the Mississippi. By such ambitious schemes, however, the colony over-reached its strength, and lost both the West and the heart of Canada itself. Title to the whole area fell in 1763 to Britain, whose government, necessarily ignorant of the future independence of the southern colonies, advanced their boundaries at the expense of that greater Canada for which the French had striven.

From the time of the Treaty of Paris the Mississippi ceased to be a factor in Canadian development, but the St. Lawrence and its western extensions directed the course of Canadian national development and international competition. In a land where roads were useless for through traffic and in an age when railways were unknown, all plans for major travel hinged on the available waterways.

The fur trade, which, with its subsidiary supply trades, was in early years the sole commercial pursuit of any importance, depended for its very existence on inland waterways from the Gulf of St. Lawrence to the Pacific coast. Goods imported from England had to be carried beyond Montreal, the furthest port accessible to ocean-going vessels, all the way to the posts of the prairies; bringing back a return cargo of packs of furs to be shipped for sale in the English market. The system had to be efficient, not only that the cargoes should reach their destination at all, but because the Canadian traders were in active competition with rival concerns operating from New York State and Hudson Bay. For the Canadian traders the main route to the West began with the Ottawa River to Georgian Bay, and on through Lake Superior to Grand Portage on the far shore. There the cargoes of the large or "master" canoes were handed over to the crews of the small northern canoes, to be carried over river, lake, and portage to posts spread fan-wise over the West. While the Ottawa was the most satisfactory route for the birch canoes, the burden of carrying supplies of food added to the trading-goods was a serious one. The attempted solution was by the use of sailing vessels on the lower lakes to carry heavy goods to the depot at Michilimackinac. So impressed were the traders with the necessity of this branch of transport that they began the construction of ships as early as 1769.

When trade rivalry gave way to war in 1775 and 1812 the outline of a Canada, in terms of waterways and commerce, had already begun to appear: so much so that the Montreal group of traders, in spite of discontent with the whole political régime in Canada, drew back after their first spontaneous gestures of sympathy with the revolutionaries, unwilling to break the commercial structure that stretched from London to the Rocky Mountains. The military invasions of the two wars cut from the south into the Canadian waterways just as the peaceful invasions of the competing traders had cut. The St. Lawrence and the Great Lakes, forming the frontier of Canada, were in themselves of little avail for defensive purposes; and could be used as such only if superior sea-power were attained. In that respect the British provinces on the inland waters were in a different situation from those on the sea; for the latter were readily accessible at all times of year, and the royal navy gave them security against attack. Communication with Quebec, on the other hand, was only seasonal; and beyond Montreal it was inter-

rupted by rapids. Transportation of reinforcements and supplies, both from England and within the province, had to be carried on chiefly by boat; but, not only were the inland waters frozen for a part of the year, but they all ran along the boundary and so were open to enemy action. Both wars, the second over a wider area, illustrate the characteristics of the Canadian waterways. In 1775 the then small Province of Quebec was invaded by two American armies following north-and-south routes that led to the St. Lawrence, the one by the Kennebec and the other by the Richelieu. Converging on the fortress of Quebec the invaders held it isolated throughout the winter. In the spring, with the river once more open to navigation, ships of the royal navy were able to sail to the speedy relief of the city. Though it failed of success, the American strategy in the one Canadian campaign of the Revolutionary War was essentially sound, for if Quebec had fallen the western posts would have been left without hope of succour.

In the War of 1812 American forces were divided over the whole length of Canada from Quebec to Amherstburg. While it has been obvious to all critics since that the weight of attack should have been concentrated at Montreal, or at least no further west than Kingston, contemporary strategists were led astray by anxiety as to an Indian uprising in Michigan and beyond. Invasion, as a result, was attempted at several points along the whole water boundary: at Montreal, Kingston, York, Niagara, and Amherstburg. The Canadian forces, stretched over such a long line, were dependent, therefore, not only on the sea-power of the royal navy but also on the maintenance of communications along the lower lakes. In practice this truth was fully proven. The early successes in the Detroit area could not be followed up in later campaigns once the small British naval force had been defeated at Put-In Bay. Thereafter Lake Erie was in the hands of the Americans. On Lake Ontario, however, the British force was sufficient to allow an attack on Sackett's Harbour (albeit an unsuccessful one) and to bring much-needed aid to the land forces defending the Niagara Peninsula.

From the end of the war to the first great period of railway construction the eyes of soldiers and merchants alike were turned to the waterways. To some extent the objects of the two groups coincided, to some extent they conflicted. There was agreement on the prime importance of the waterways for transport, and on the urgent demand for their improvement by canalization. But what

route should be developed? It was the convinced view of the War Office, based on the experience of the war and on general reasoning, that the trunk line should be as far as possible from the frontiers. It was true that reduction of armaments on the lakes was provided for under the Rush-Bagot agreement of 1817; but international agreements are not beyond question, and certainly this particular one was honoured in the breach as well as in the observance. Assuming that the upper St. Lawrence was open to attack, and that the lakes must be reached at all cost in case of war, the British government resolved on the creation of a water route from Montreal to Lake Ontario, by way of the Ottawa River and canals to be constructed on the Rideau River. So strongly did they feel on the subject that they were prepared to shoulder the cost, and the construction was carried out between 1826 and 1832.

While the imperial government regarded the improvement of the St. Lawrence as undesirable on military grounds, they were not prepared to oppose it directly, realizing the popularity of the plan and the commercial advantages which it would probably bring. There was, indeed, no doubt of the emphasis laid on the St. Lawrence route by all those who were concerned with commerce. It was more than just a public work: it was the very core of the plan by which the otherwise ideal chain of inland waterways would carry the commerce of half a continent, turning Canada from a primarily agricultural and thinly-populated colony to a thriving centre of business. Improvement of the waterways was a fetish, a religion, a main national objective.

But while the creation of this visionary commercial state was, from one point of view, economic nationalism, from another it was deeply involved in international relations. The trade of the colony alone would hardly justify the cost of canalization on the St. Lawrence and at Niagara, or the improvement of navigation on the lower river. The stream of boats which the merchants of Montreal saw when they shut their eyes and opened their imagination was carrying goods to and from the growing towns of the American Middle West. The problem of the moment was not that insufficient traffic existed but the danger that it might be directed to the Erie Canal, opened with a triumphant procession in 1825. Newspapers printed reports on the traffic moving over the rival route, and Canadians watched with bated breath, applauding every cargo that was saved for transit by what they called the "natural" outlet of the

great river. The answer to the American challenge, however, was neither observation nor appeals to logic, but the provision of a waterway that would carry steamers, and not just the little bateaux or Durham boats. Such through communication was not achieved at all until after 1840, and it was 1849 before the whole St. Lawrence system was completed from Kingston to Montreal. In the meanwhile the Welland Canal had been in use since 1829.

The national wealth was to be built up by international traffic. Was the traffic to be carried only in British ships, or were the Canadian waterways to be opened to those of foreign registry? Were the Canadian canals to welcome American ships as well as American goods? In the early nineteenth century Canada was still within a modified form of the British mercantile system, which, in addition to allowing her preferences in the markets of the United Kingdom, restricted shipping by the Navigation Acts. Under the strict interpretation of these Acts it was not permissible for American ships to ply between their own and Canadian ports or between two Canadian ports on the Great Lakes; in practice, however, such trade was rarely stopped. There remained the through traffic on the St. Lawrence and the oceans as restricted to British bottoms. In the forties the picture changed. The American Drawback Acts, permitting free passage through the United States of goods sent to Canada, favoured the Erie and threatened the St. Lawrence Canals. The free-trade movement in England, resulting in the abolition of preferential treatment of the Canadian staples of grain and lumber, also encouraged the competitive American routes, for no peculiar advantage any longer was attached to goods exported from or through Canada. Finally, and as a logical result, the Navigation Laws ceased to apply. It thus became the Canadian interest to remove all barriers to American use of the canals, which were completed at about the same time. But, while this was in any case the advantageous policy to follow, an attempt was made to use it as a bargaining-point in trade negotiations with the United States. In the Reciprocity Treaty of 1854, consequently, free navigation of the St. Lawrence was granted to American vessels.

Military and commercial necessities demonstrate most obviously the place of the inland waterways as links in the territories which later came to form the Dominion. There were other aspects of transportation, too, that played their part: the everyday movement of people and goods along the rivers and the lakes, in craft of all

kinds from the humblest bateau to the "luxurious" and "elegant" steamships of the thirties and forties. From the earliest days settlements and towns had been placed on waterways, and the natural highways that directed their location continued to serve them when they had grown beyond the pioneer stages. How far could the waterways be described as tying together individual communities into the nucleus of a national structure? The union of the Provinces of Upper and Lower Canada, attempted in 1822 and achieved in 1841, drew support in no small degree from the demand in both provinces for joint improvement of the St. Lawrence and equitable distribution of the customs dues which were levied at Quebec on goods entered, whether they were addressed to the upper or the lower province. In a broader sense the St. Lawrence-Great Lakes system created a geographical entity which challenged the inhabitants to turn it into a political unity. That the Province of Canada was built on the waterways was no accident, but a logical development.

It remained to be seen whether the waterways could in the same way reach out toward the two extremities of the continent and draw into one whole the British territories from Atlantic to Pacific. Between the Maritime Provinces and Canada political and economic connections were notoriously as slight as communications were slow and uncertain. So irregular was transportation by boat that even such caricatures of roads as that by the Temiscouata Portage or the more easterly Kempt Road were used as main links. From time to time regular steamship services between Quebec and Maritime ports were organized, but they seldom lasted for long. The voyage was a long and circuitous one, a difficulty which it was often proposed to eliminate by a canal across the Isthmus of Chignecto, but the Baie Verte Canal was never dug. The emphasis laid on the need for an intercolonial railway further demonstrates the inadequacy of water transport. It was the railway, definitely promised, which made it possible for the Maritime Provinces to join with Canada in the Confederation of 1867.

In the minds of the people of Canada the St. Lawrence led eastward to the sea and to England more really than to the Provinces of New Brunswick and Nova Scotia. But westward the river and its connecting waterways were avenues across the continent. When the Montreal fur trade collapsed in 1821 the line with the North-West was for a time broken, and succeeding commercial interests

turned toward communication with the Middle West: nation-building in the economic rather than the territorial sense. It was in this scheme that the early main railways—Grand Trunk and Great Western—followed the path traced by the waterways. But there were not lacking prophets who continued to fix their eyes on the Pacific, looking toward a great British-Canadian empire. Here the waterways played against the national end, for the ready transport by the Red River was fast attaching the only prairie settlement to the United States. Well executed as it had been, the old transport by birch canoe was now hopelessly outmoded, and where could an alternative be found? A compromise method of rail to Collingwood, steamer to Fort William, and canoe to the Red River Settlement, was tried as a temporary expedient; but it was manifestly inadequate. The Pacific railway marked the realization that the waterways worked against westward expansion more than for it, that only by rail could British Columbia and the prairie territory be added to political union with Canada. There were, then, distinct limits to the place that waterways could take in the formation of a national entity, and it is significant that in all discussions of Confederation only passing attention was given to water transport, whereas discussions of railways were always prominent.

After Confederation the national theme in transportation was sustained mainly by the new transcontinental railways; but still the waterways continued to play a part, if a secondary one, amongst the centripetal forces. In spite of temporary mental lapses it was generally recognized that grain and other bulky articles must be moved from Fort William to tidewater by water rather than by rail, because of the greater expense of the latter. In so far as the National Transcontinental Railway was intended as a through route for grain it was a departure—and an expensive departure—from a tried principle. The Canadian lake boats picked up grain at Fort William and Port Arthur, to which places it was carried by the railways on the prairies. The boats were able to secure as well some portion of the freight moving eastward from such American ports as Duluth. The problem came in the continued carriage of the cargoes to Canadian ocean ports, without losing too large a portion to American railways at Buffalo. It was again the old problem of attracting traffic down the St. Lawrence in competition with the superior advantages held by the large ocean ports of the United States. Various means were tried: enlargement of the Welland and St. Lawrence Canals, aboli-

tion of tolls, and, for a time (1923-34), amendment of the Canada Shipping Act, to allow foreign ships to trade between two Canadian ports. The last measure manifestly clashed with the desire to encourage Canadian ships as well as Canadian routes, and was introduced only because of the additional and temporary factor of a shortage of boats.

The whole question of the use of Canadian canals and other inland waters by foreign ships was one in which various considerations had to be balanced. The ideal situation, no doubt, would have been one in which a constant stream of British ships passed through the canals, bearing both American and Canadian freight to the harbours of Quebec, New Brunswick, and Nova Scotia, thence to be exported to markets abroad. Grim experience, however, had demonstrated that the ideal was unattainable. Some traffic—Canadian as well as American—went by way of American railways, the Erie Canal, and American ports, and presumably would continue to do so. The Dominion government, therefore, resorted to the expedient adopted by its provincial predecessor and suggested access to Canadian waterways as an asset in exchange for tariff or other concessions. When the Joint High Commission met at Washington in 1871, this was one of the inducements offered by Canada, particularly with an eye to reciprocity. Though the latter was not obtained, the free navigation of the St. Lawrence was definitely assured to American ships, together with a promise by the British government to urge on that of Canada the use of Canadian canals on terms of equality, and a corresponding promise by the United States government to urge the states concerned to allow the use of canals connected with boundary waters. Three years later, in the abortive negotiations for a reciprocity treaty, the Canadians proposed that the canals of each country should be open to the vessels of the other, that vessels of either country be free to register in the other, that Canadian canals be enlarged, and that joint commissions be set up for the improvement of the rivers St. Clair and Detroit, and Lake St. Clair.

Since the negotiations of 1874 failed of success, the position remained as somewhat incompletely defined under the Treaty of Washington, and years of international negotiations were needed to establish any agreement as to the exact privileges to be allowed by each country. The Canadian policy was not altogether consistent, for it aimed both at the traditional object of maximum

traffic for the St. Lawrence and also at rights for Canadian ships on the Champlain Canal and Hudson River, that is to say, both at the nationalist plan of east-and-west traffic and its chief competitor, north-and-south traffic. The latter point was settled first, though not without two years of diplomatic exchanges.<sup>1</sup> The rule that a Canadian ship could not carry goods between two American ports stood in the way of passage beyond the first point of entry, and it was only by the exercise of power placed in the hands of the Secretary of the Treasury that Canadian vessels were allowed to proceed as far as Albany with cargoes in bond destined for the port of New York. In making this possible the American government took the attitude that it was a concession, since the Hudson was an internal waterway, and regarded it as for the benefit of Canada rather than for American routes. Canadians, on the contrary, were anxious to secure American traffic to Canadian ports. On the St. Lawrence itself there was no question, as in part it was an international river, and the rest of its course was explicitly opened by the Treaty of Washington. But the treaty did not apply to the Welland Canal, and the Canadian government was reluctant to open it on equal terms to American vessels *en route* to nearby American ports. As a means of stimulating through traffic, the government, in 1884, instituted a rebate of 90 per cent on all grain cargoes being carried as far as Montreal for export. In reply to protests, the Canadian government held that this action involved discrimination against United States ports but refused to admit that it was discrimination against American citizens.<sup>2</sup> American officials, however, strongly denounced the Canadian action, and imposed tolls on the Sault Ste. Marie Canal in retaliation. Since no alternative Canadian canal had yet been constructed there, the Canadian government was obliged to capitulate, and to charge tolls on a basis more acceptable to the United States.

In international bargaining over waterways the Canadian government had made little headway. There was, it was true, permission to navigate American waters as far as Albany, granted as of grace rather than of right; but it was a gain for Canada's commerce at the expense of her own waterway. Some American ships, of course, made use of the St. Lawrence as far as Montreal, but not enough. It was evident that they could not be forced to do so by

<sup>1</sup>*Canada, Sessional Papers*, 1876, no. 111.

<sup>2</sup>*Ibid.*, 1892, no. 99.

the rather clumsy tactics of manipulating tolls; and in any case all tolls were abolished in 1903. There remained, apparently, only the alternative of a more straightforward encouragement by means of improving the waterways—the outstanding weakness being the small dimensions of the St. Lawrence Canals, which were fourteen feet in depth, and prevented the large grain boats of the upper lakes from navigating east of Prescott. Large expenditures on canals, with dubious and indirect returns, could not lightly be undertaken in years when the Dominion was making large commitments for railways: more especially as the transcontinental railways had become the very ark of the nationalist covenant, while canals had long ceased to occupy such an exalted station in the mind of the public. From these doldrums it then appeared that the main Canadian waterway might be rescued by a surprising development—the adoption in the United States of a policy of creating a deeper waterway by common action. That shippers in certain parts of the United States could profitably make use of the St. Lawrence was an old story, dating back to the eighteenth century; but that the American government should recognize the value of the St. Lawrence in any positive way was new. The first official move arose out of a resolution passed by the Senate in 1913, “requesting the President to enter into negotiations with Great Britain with the view to securing an international agreement for the concurrent or co-operative improvement of navigation in the boundary waters of the United States and Canada, for the advancement of the commerce of the two countries.” After an interruption caused by the War of 1914, study of the improvement of the St. Lawrence for purposes of navigation and power was referred to the International Joint Commission, and subsequently to advisory committees in each country and to a joint board of engineers. The non-technical bodies reported in favour of the project; and the Board of Engineers submitted plans for the actual works to be undertaken.<sup>3</sup> The prime consideration, the board stated, was that of navigation; but since the development of power did not in any way conflict, it could be provided for at the same time. The Board envisaged an eventual depth of 30 feet, with a temporary depth of 25 or 27 feet. The largest works would be on the St. Lawrence, where the rapids were to be overcome by flooding out, rather than by side canals; the new

<sup>3</sup>*Report of the Joint Board of Engineers on the St. Lawrence Waterway Project* (Ottawa, 1927).

Welland Canal was already nearly completed; so that the only other requirements would be deeper channels in the Detroit and St. Clair Rivers and possibly a new canal at Sault Ste. Marie. The cost, including electric power, was estimated at from \$620 to \$650 million, depending on decisions as to the exact nature of the new works.

A treaty embodying the proposals was signed in 1932, but was rejected by the American Senate in 1934. With one exception the senators from New England and New York voted against it; most of those from the Middle and Far West were in favour; while the South and the Mississippi Valley were divided, with a majority against the treaty. Thus perished the first attempt to develop by international agreement the seaway that would fulfil a long-cherished national ambition of Canada. The initiative, however, remained with the American government, which put forward a second text in 1938, greeted with surprisingly little enthusiasm in the Central Provinces of Canada and probably no more acceptable to the Senate than was the first. The project thus hung fire for a time until it was revived during this war as a measure designed to promote the defence of North America. At first the emphasis was laid on hydro-electric power, needed in increased amounts for the war industries of both countries. A preliminary step toward this end was the agreement reached in October, 1940, between the Canadian and American governments under which the Province of Ontario was enabled to take an additional flow at Niagara to meet immediate needs of power. The extra volume was to be balanced by diversion from the Albany River, arrangements for which were already under way. The watershed north of Lake Superior had already been pierced to turn the waters of Long Lac back into the St. Lawrence basin. That part of the work was, at the time of the agreement, virtually completed; and the second, that by the Ogoki River, was to be begun. In October the President announced that he had allocated from a special defence fund one million dollars for investigation of the possibilities of increasing power development on the St. Lawrence; and in the same month the War Department of the United States established a new district, the St. Lawrence River District, with headquarters at Massena, New York, to facilitate exploration of the possibilities of obtaining increased power to supply defence industries.

Thus the argument for the development of the St. Lawrence in respect of hydro-electric power was the unusual need and the emer-

gency created by the war; but, since President Roosevelt had for long been an ardent advocate of the seaway plan, it was at once suggested by the newspapers that works for navigation would also be urged before long. It was a prophecy that was soon to be fulfilled. Early in December, at the Great Lakes-St. Lawrence Seaway and Power Conference in Detroit, a message was read from the President representing the whole plan—in respect both of power and navigation—as one urgently needed for defence. What had before been an opportunity, he said, was now a vital necessity.

The United States needs the St. Lawrence Seaway for defence. The United States needs this great land-locked sea as a secure haven in which it will always be able to build ships and more ships in order to protect our trade and our shores.

The United States needs, tremendously needs, this power project which will form a link in the seaway in the International Rapids section of the St. Lawrence River to produce aluminium and more aluminium for the airplane programme which will secure command of the air. . . .

No one who has studied our national defence problems and the international situation can possibly fail to see the need for this project in the defence of the continent. The Congress of the United States in providing funds for a two-ocean navy on a programme covering many years has properly recognized the place of sea-power in continental defence. The world's merchant tonnage is diminishing at the rate of tens of thousands of tons a month. The distances which may be effectively covered by bombing planes are rapidly increasing.

Seacoast shipyards are already overtaxed with uncompleted construction. Shipyards on the Great Lakes, with access to the ocean, yet close to the sources of supply of labour, raw and finished materials, further removed from possible attack, may be a vital factor in successful defence of this continent. . . .<sup>4</sup>

Thus was completed the transmutation of the St. Lawrence development scheme from one designed in Canada in the eighteenth century to promote the national wealth through international trade, to one designed in the United States in the twentieth as an international undertaking intended for the joint defence of the continent. Ghosts of other generations crowded around the opening of this new Act: fur traders of Montreal, building up their business in competition with those of Albany; military strategists of the early nineteenth century, planning fortifications for the Canadian shore and sedulously avoiding the St. Lawrence as a transportation route dangerously exposed to hostile action; merchants of Montreal,

<sup>4</sup>Quoted in the *New York Times*, Dec. 6, 1940.

struggling for uninterrupted navigation to the Great Lakes as a means of controlling the commerce of half a continent; statesmen bartering the Canadian waterway for favourable tariff arrangements, or devising means of steering the grain boats past the enticements of Buffalo.

Negotiations between the Canadian and the American governments have been conducted, with their culmination delayed, apparently by the pressure of other business before Congress, or, as has also been suggested, by Canadian reluctance to make further large expenditures during the war. It is assumed, however, that the Canadian government and Parliament would not refuse to accept the plan, and the decision therefore must rest with Congress. That there exists in the United States strong opposition to the project is undoubted. Most of the arguments levelled against it are the same as those used in the thirties when the Senate rejected the first treaty, and arise principally from areas or interests which consider that they would be adversely affected. It is held, for example, that it would damage the seaports of the North Atlantic and the Gulf of Mexico. New York State sees a danger to both its power and transportation agencies. The New York Board of Trade, the Maritime Association of the Port of New York, the Merchants Association of New York, the New York Chamber of Commerce, and the New York State Waterways Convention have all condemned the plan.<sup>5</sup> The Niagara Frontier Planning Board published a special pamphlet with a list of objections three pages long.<sup>6</sup> Such statements, however disguised in terms, reflect the old competition of the Erie Canal and the New York railways with the St. Lawrence route. From other transportation interests, covering a wider area, such as the Association of American Railroads and the Central Western Shippers Advisory Board, have also come protests against the seaway, which may, in part at least, be attributed to fear of new competition.

In many of the criticisms made by individuals or groups it is charged that the President's argument in favour of the seaway on grounds of its necessity as a defence measure is but a cloak to conceal his long-held belief in the plan for its own sake; and further charged that, even as a defence measure, the plan is unsound. Even

<sup>5</sup>These and similar comments will be found in the files of the *New York Times*.

<sup>6</sup>B. D. Tallamy and T. M. Sedweek, *The St. Lawrence Seaway Project* (Buffalo, 1940).

if it were deepened to 27 feet, it is said, the seaway would probably not be used by ocean-going merchant vessels, and, if it were, these would take away the business from American lake boats and railways. Power could be produced more cheaply and in a shorter time by steam; new ships can be built at ocean ports; the seaway will take so long to construct as to be useless in the present emergency; the river is frozen for five months of the year; canals are vulnerable to bombers; the whole scheme is too expensive, and more a part of the New Deal than of a genuine programme of defence. These and other arguments—some weighty, some petty—are used against the plan.

But the vision called up by the President, granted that it may be criticized, is still a fascinating one. In time of war armed ships up to 10,000 tons—that is, all but battleships—would be built at lake or river ports, and steam down the seaway to their work on the ocean. What a contrasting picture with that painted by a senator in 1934, of British battleships sailing up the St. Lawrence to menace the United States! The Rush-Bagot agreement, of course, would be either abrogated or shelved: what once was a constant cause of alarm in both countries would become but an incident in the sweeping design for continental defence, of which the seaway would form a part. The use of the seaway for normal commercial purposes, while less striking in one sense, conjures up possibilities of change over a period of years. Whether, or to what extent, it would be used by ocean vessels, what effect it would have on freight rates, how it would affect other transportation routes—none of these questions can now be answered with certainty. All that can be said with assurance is that there would be created a waterway capable of taking large vessels over a length unprecedented for inland navigation.

Problems in international relations would undoubtedly arise. Opponents of the seaway point to the proposed international tribunal with power to decide on future diversion at Chicago as "placing in the hands of a foreign country the fate of the future development of a Great Lakes-Gulf of Mexico waterway"; and suggest that "if the seaway were ever to be used during times of war, when one of the two countries was a belligerent and the other a neutral, it is conceivable that many subjects of dispute would arise"; and they ask which country would defend the seaway in case of attack.<sup>7</sup>

<sup>7</sup>*Ibid.*, 12, 14.

Agreement would have to be reached on cost of upkeep, and on the rights of each of the signatories, as well as of foreign states, to use the seaway. Presumably American vessels would be free to use the lower as well as the upper river, and presumably it would follow that they should be enabled to carry goods between two Canadian ports. Would like freedom be accorded to vessels of neither American nor British registry? The resultant competition from foreign ships has already been cited as an argument against the seaway. Would a new series of Navigation Acts be drawn up between the British Empire and the United States based on this common waterway?

Here for the present the story must stop. If negotiations are successful, and if an agreement is made—whether by treaty or concurrent legislation—a new chapter will begin in the long history of the St. Lawrence River. The place of the waterway in the scheme of things may well take a new form: changing, perhaps, in tune with the altered relations of Canada and the United States, as hurried on by the relentless pressure of war. Is it too fanciful to imagine that what an historian has aptly called “the commercial empire of the St. Lawrence,”<sup>8</sup> based on economic and national motives, may be transformed into a political empire of the St. Lawrence, child of its generation, jointly cherished by the Republic and the Dominion.

<sup>8</sup>D. G. Creighton, *The Commercial Empire of the St. Lawrence* (Toronto, 1937).

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## SOME COMPARISONS IN CANADIAN AND AMERICAN RAILWAY FINANCE

HERBERT E. DOUGALL

AT first sight this subject may appear too specialized to appeal to any groups except those interested in the highly technical phases of transportation. However, on second thought it is apparent that the financial practices of railroads and the financial results of railroad operation are of considerable interest and importance to a very large number of persons. In both Canada and the United States the efficient and economical operation of our transportation services is of great national significance, especially in this period of emphasis upon adequate national defence. Railroads cannot play the role they should in a defence economy if they suffer from financial mismanagement or if their revenues are inadequate to provide proper equipment and service. But even in ordinary times (if we can think of "ordinary times") large groups are directly or indirectly concerned with railway operation, service, and revenues. In Canada, railway capital, as measured by stocks and funded debt, amounted to nearly three and a half billion dollars at the end of 1938.<sup>1</sup> These figures represent the balance sheet investment only, not the actual cash outlay for railway transportation. But they suggest the great stake which private investors and the government have in the Canadian industry. In the United States, the combined balance sheet of Class I roads (those having gross revenues of one million dollars or more) shows a property investment (after depreciation) of over twenty-two billion dollars. Against this figure over eighteen and a half billion in securities are outstanding, including nearly eleven billion of funded debt. Half of this funded debt is owned by banks and insurance companies, so that indirectly millions of depositors and policy-

<sup>1</sup>At the end of 1936, before the revision of accounts under the Capital Revision Act of 1937, the figure was four and a half billion dollars. (Dominion Bureau of Statistics, *Statistics of Steam Railroads of Canada for the Year ended December 31, 1938*, pp. 10, 11.)

holders have a stake in the industry. And nearly 900,000 stockholders share the ownership of the American lines.<sup>2</sup>

In Canada, in 1938, an average of 128,000 employees shared a payroll of nearly two hundred million dollars.<sup>3</sup> In the United States almost a million railroad employees draw one and three-quarter billion dollars annually. These groups are also vitally concerned with the financial status of the industry. And I need not emphasize the interest of the millions of users of railway services and of the great industries providing the carriers with their materials and equipment, in the efficiency and earning power of the railways.

*Canadian and American Railway Problems.* Not many years ago a study of Canadian and American railway finance would have brought to light very few problems or situations of a parallel nature; in fact, sharp contrasts would have appeared. The high-lights would have been, for Canada, construction and operation of crown-owned lines; continuous substantial public aid to privately-owned lines; financial collapse of two of the three transcontinental systems and their inclusion in a great national system; the financial decline of the large private company and the heart-breaking deficits of the national system; and perplexing problems of competition and co-operation between the two halves of Canada's network, one-half private, the other public. As for the United States, an earlier study would have emphasized complete absence of publicly-owned mileage; the growth of a railway network composed of hundreds of individual companies; absence of public aid after the developmental period; and government regulation of companies which, while privately owned, were classed as public utilities and controlled as such. If there was a "railway problem," it consisted in Canada of reconciling the operations of half-public and half-private lines and of dealing with the great losses of the national system which placed such a burden on the public treasury, and in the United States, of developing an adequate system of regulation of a large number of private units in the interests of shippers and the public.

Most of these problems are still with us, but during recent years the industry in both countries has faced, and faces, problems similar enough to suggest that common solutions may be applied—problems of deficit operations growing out of an over-supply of transport

<sup>2</sup>Interstate Commerce Commission, *Statistics of Railways in the United States*, 1939.

<sup>3</sup>*Statistics of Steam Railways of Canada*, 1938, p. 32.

facilities, and problems arising out of the competition of newer forms of transportation and its inroads into railway revenues. The one great distinguishing feature which still stands out is that in Canada the taxpayer shares with the investor the effects of shrunken railway earnings, while in the United States the private investor bears the brunt of railroad losses.

*Public Aid to Railways.* Some financial problems now facing the Canadian railway industry, especially those connected with the operation of the Canadian National, had their origin in the amount and types of public aid extended during the construction period. In this respect the early development of the industry in both countries presents a similar pattern. Railway facilities were necessary for the economic growth and political unity of both new nations, and since immediate financial returns were not expected, private capital could not be relied upon alone to provide the needed facilities.

In the United States, the importance of governmental aid and of public participation in railway financing in the first half-century of the industry's growth can hardly be over-emphasized. In the 1830's, along with other public improvements, several Eastern States undertook the construction of railroad lines. But the financial results of state construction were so disappointing that, with the exception of two lines, the states withdrew from the business and disposed of the roads to private corporations, usually at a loss, and subsequently provisions were inserted in their constitutions prohibiting states from engaging directly in business ventures.<sup>4</sup> State aid, other than direct construction, took a similar form and led to similar disastrous consequences, including widespread repudiation of state railroad bonds, followed by constitutional provisions limiting or prohibiting state aid to private corporations. Local aid—that of cities, towns, and counties—took the form of cash subsidies and of subscriptions to railroad bonds and stock, with the funds raised through the sale of municipal bonds. A veritable orgy of local extravagance in this respect finally led to similar constitutional provisions in many states prohibiting or restricting the granting of local aid to private railroad corporations.

Thus in the United States the disappointing financial results of early public aid, the fraud and corruption attending the granting of subsidies, and the over-expansion of railroad facilities taught an

<sup>4</sup>D. P. Locklin, *Economics of Transportation* (Chicago, rev. ed., 1938), p. 51.

early lesson that might well have been learned in Canada in later years, but which was not learned until too late.

Aside from direct loans to six roads to complete a through route to the Pacific, federal aid was confined to huge land grants which, by 1871, reached a grand total of over 183 million acres—over 286,000 square miles, or  $9\frac{1}{2}$  per cent of the area of continental United States! Including the granted land valued at its subsequent market value (a method of valuation strenuously opposed by the railroads, who feel that the value at the time of the grants should be used), the sum total of public aid to American roads in this early period approximates one and a quarter billion dollars.<sup>5</sup> Professor Ripley estimates that the state, federal, and local aid to railways up to 1870 was equivalent to 40 per cent of the cost of the railroads then in existence.<sup>6</sup>

One form of public aid employed in continental Europe was not widely used in the United States, namely, the public guarantee of securities. Perhaps the existence of unlimited public lands available for land grants made resort to the guarantee unnecessary. At any rate, there is cause for rejoicing in Congress's neglect to employ the form of public aid which removes all incentive to economical operation. By so doing, Congress avoided a policy which in Canada was destined to create that country's largest peace-time fiscal problem.

After the Civil War, the growth of the American railway industry was completed and financed solely by private capital. Until the depression of the 1930's, except for the twenty-six months of federal operation from December, 1917, to March, 1920, the federal government concerned itself not so much with the financial status of the industry as with the problem of regulating its rates, service, and management.

The pattern and results of public aid to railroads in Canada, a story which has been the concern of Canadian government commissions and economists for decades, cannot and need not be repeated.<sup>7</sup> Canadians are familiar with the change from a policy

<sup>5</sup>Federal Coordinator of Transportation, *Public Aids to Transportation*, vol. II (Washington, 1938), p. 101.

<sup>6</sup>W. Z. Ripley, *Railroads: Rates and Regulation* (New York, 1912), p. 39.

<sup>7</sup>For convenient references see W. T. Jackman, *Economic Principles of Transportation* (Toronto, 1935); L. T. Fournier, *Railway Nationalization in Canada* (Toronto, 1935); L. R. Thompson, *The Canadian Railway Problem* (Toronto, 1938); *Report of the Royal Commission to Inquire into Railways and Transportation in Canada, 1931-2*.

of direct aid by subsidy and land grants to the first transcontinental, the Canadian Pacific, to one of loans and public guarantee of securities to the Canadian Northern and the Grand Trunk Pacific. In all, over forty-seven and a half million acres of land were granted by the provinces and the Dominion, of which over three-quarters went to the Canadian Pacific.<sup>8</sup> Provinces and municipalities granted lands and gave direct subsidies. And aside from its investment of half a million dollars in the publicly constructed lines (Inter-colonial, National Transcontinental, and—later—the Hudson Bay Railways) the Dominion government, to the end of 1923 (after which year the properties now comprising the Canadian National Railway System were operated under one management), had handed \$104½ million in cash and constructed lines to the Canadian Pacific System, and \$618 million to the Canadian Northern, Grand Trunk, and Grand Trunk Pacific, and had guaranteed \$700 million of security issues of these latter lines.<sup>9</sup>

But the Dominion's contribution to Canadian railway development and operation was only beginning in 1923. Since that year, the Canadian National Railways have, through deficit operation, cost the Dominion Treasury a total (to December 31, 1939) of \$526 million in cash deficits. Together with unpaid interest on government advances, the deficit totals \$963 million in the sixteen-year period, or an average of \$60 million a year.<sup>10</sup> Had it not been for the cancellation of a large amount of debt to the Dominion as a result of the Capital Revision Act of 1937, the average would have been substantially higher.

The investment of the public through governments, in Canadian railways, including all guarantees of securities, has exceeded three billion dollars—a figure which is astronomical in relation to Canada's population and national income. Eighty per cent of this total has gone to the lines of the Canadian National System. Ironically enough, through taxation, a very substantial contributor to the carrying of the Canadian National has been her privately owned rival, the Canadian Pacific Railway.

— *Railway Financial Policies.* Let us now compare the financial situation in the Canadian and American railway industries on the eve of the great depression of the thirties, review briefly the results

<sup>8</sup>*Statistics of Steam Railroads of Canada, 1938*, p. 12.

<sup>9</sup>*Report of the Royal Commission to Inquire into Railways and Transportation in Canada, 1931-2*, pp. 86-90.

<sup>10</sup>Canadian National Railway System, *Annual Reports*.

of the disappointing years since 1929, and the causes of those results, and examine the extent to which common problems have emerged in the two countries.

The railways of the United States as a group entered the depression with a capital structure heavily weighted down with debt, although within the group marked differences existed. As of the end of 1929, bondholders had supplied nearly one-half of railway capital, while owners, through purchase of stock and reinvestment of earnings, had contributed the other half. The great volume of debt, totalling nearly eleven billion dollars, required annual interest charges of over half a billion dollars, which, together with rentals and taxes, constituted an annual load of fixed charges of one billion dollars, a bill which had to be met after all operating expenses were cared for. Why was more equity capital not forthcoming in a country where unlimited funds awaited investment? After the era of public aid, investors from the eastern financial centres and from Europe demanded prior liens and mortgage security, and railway promoters issued as much debt as possible in order to retain control and maximum profits through stock ownership. The construction company device, whose history makes rather unsavoury reading, also contributed to the over-emphasis upon debt financing. In the war and post-war periods, to the middle twenties at least, the securities markets were more partial to bonds than to stocks, and institutional investors such as banks and insurance companies were required to invest in senior securities. Most important of all, it was assumed, because of the basic character of the industry and its indispensability in the economy, that railway earning power would always be ample and steady enough to support a large and permanent debt burden—this in spite of such periods as 1893-4, when 25 per cent of the railway mileage went into the hands of receivers. Even though, between 1924 and 1929, during the period of maximum railway earnings, stock and reinvested profits constituted the chief source of new capital, the American carriers as a group entered upon the depression with such a burden of debt and fixed charges as to make a majority of the companies highly vulnerable to even a modest shrinkage in revenues.<sup>11</sup>

<sup>11</sup>For a convenient account of railway financial policy see H. G. Moulton and associates, *The American Transportation Problem* (Washington, 1933), chaps. XII-XIV. See also H. E. Dougall and L. C. Farwell, "A Review of Railroad Financing, 1920-1938" (*Journal of Land and Public Utility Economics*, May, 1940, pp. 207-13, and Aug., 1940, pp. 306-17).

Turning to the Canadian scene, the Canadian roads, especially the Canadian National, entered upon the depression period with an even greater relative burden of debt. The financial history of the Canadian Pacific parallels closely that of the major American roads, although it received far more generous public aid at the outset than did any American company of similar importance. The original gift of completed line to the private company which took over the task of completing Canada's first transcontinental, the generous cash subsidies and land grants, and the other concessions in taxes, rates, and duties, enabled the new concern to begin its corporate life without a pressing debt burden. In subsequent years the Company relied upon consolidated debenture stock (a form of perpetual debt) as a major source of funds. But such was the reputation enjoyed by the C.P.R. in the financial markets of Europe and North America that its preference stock and ordinary stock, with their excellent earnings and dividend records, came to enjoy the status of trustee investments. The Company's ability to expand through the issuance of stock and through reinvestment of earnings, coupled with the statutory limitations on its debt per mile, kept the capital structure of the Canadian Pacific from becoming as top-heavy with debt as that of many large American lines. At the end of 1929 funded debt made up only 34 per cent of capital structure. In 1932 Parliament authorized the road to issue bonds up to 50 per cent of its property investment, but it has not been legal to exceed that proportion. At the end of 1939, the capital structure consisted of long-term debt, 41 per cent, preferred stock, 11 per cent, and common stock and surplus, 48 per cent—a financial structure considerably more top-heavy with debt than had prevailed ten years earlier on the eve of the depression. Nevertheless, in the face of declining revenues the C.P.R. was in a position, if not to continue dividends on its stock, at least to earn and pay the interest on its debt and thus to avoid default and receivership.

The financing of the lines operated by the Canadian National Railway Company presents an entirely different picture. Encouraged by the policy of generous public guarantee of securities, these lines, before their acquisition by the Dominion, had committed themselves (and their guarantor) to a debt burden out of all proportion to traffic and earnings.

From its inception the Canadian Northern relied upon bond issues—at first on issues guaranteed by the provinces and by the

Dominion, and later on those sold on the basis of its own credit. Practically all its early financing had been done in London, and, with the outbreak of the Great War, with much construction still uncompleted, capital could be obtained only by short-term financing and government loans. Unable to meet its fixed charges without continued assistance from the government, it was acquired by the Dominion in 1917, following the report of the Railway Inquiry Commission. The policy of reliance upon debt and upon government guarantees meant that all of the money that had gone into actual construction—and this even before traffic had been developed—had been borrowed, with the exception of small cash subsidies and the proceeds from the sale of the lands. As of June 30, 1916, that is, prior to its acquisition by the Dominion, the debt of the Canadian Northern exceeded \$400 million, as compared to stock of \$100 million for which no consideration had been received by the Company. Only a miracle of traffic growth could have saved the road from default.

The financing of the Grand Trunk System prior to its acquisition by the Dominion presents a similar picture, in so far as the western extension is concerned. In 1902, anxious to round out its excellent eastern system, the Grand Trunk proposed the construction of a new line from North Bay to the Pacific. To obtain the necessary public aid, the Company accepted the government's counter-proposal that its western line (the Grand Trunk Pacific) extend from Winnipeg to Prince Rupert and that the government construct and lease to it the eastern section (the National Transcontinental) running from Winnipeg to Moncton, New Brunswick. The government was to guarantee the interest on Grand Trunk Pacific bonds up to 75 per cent of the cost of construction. When it was found that the cost of the National Transcontinental reached \$80,000 per mile, the Company objected to carrying out its part of the bargain, and the National Transcontinental became a part of the Canadian government railways in 1916. In the meantime, the Company was having difficulty with the Grand Trunk Pacific. Securities of the latter were guaranteed in part by the Dominion, and in part by the parent company. The securities guaranteed, and the advances by the latter, totalled \$123 million by 1916.<sup>12</sup> Like the National Transcontinental, the Grand Trunk Pacific had cost much more than had been originally intended. The cost per

<sup>12</sup>*Report of the Railway Inquiry Commission, 1917*, p. xxv.

mile of the Grand Trunk Pacific was just twice that for the Canadian Northern. The enormous cost, defrayed almost entirely from debt, loaded the line with fixed charges; in addition, its operating expenses rose to a point where they exceeded operating revenues by 1917. For the year ended December 31, 1918, the Grand Trunk Pacific deficit after interest exceeded ten million dollars.<sup>13</sup> In March, 1919, the Minister of Railways and Canals was appointed receiver, and the Grand Trunk Pacific lines were operated under his jurisdiction until the acquisition of the rest of the Grand Trunk System by the government in 1920.

At the time of acquisition of the Grand Trunk proper by the Dominion, its debt, including guaranteed stock, exceeded \$300 million, while its stock (preferred and common) amounted to only \$180 million.<sup>14</sup> Like that of the Canadian Northern, such a capital structure would have required a tremendous traffic volume to prevent default, but had the Grand Trunk not been saddled with the commitments made at the time of its expansion, it might have survived. The government, following the report of the arbitration board, acquired the preferred and common stock of the Grand Trunk for no consideration, and subsequently merged the Grand Trunk lines with other public lines to form the present Canadian National System.

The Canadian National Railway Company, consisting of lines originally constructed by the Dominion and of the old Canadian Northern and Grand Trunk Systems, began its career as a large unified system with a prohibitive debt burden—a burden which, as a result of successive operating deficits, was even more enormous at the beginning of the depression of the thirties, and out of all proportion to the earning power of the property. As of the end of 1929, the capital account included \$1,100 million of funded debt in the hands of the public, of which \$900 million was guaranteed, \$900 million of debt to the Dominion government, or total debt of two billion dollars, while the equity, consisting of investment in government-constructed lines and of stock in the hands of the public, amounted to only \$690 million.<sup>15</sup>

*The Railways in the Depression.* The financial fortunes of the

<sup>13</sup>Fournier, *Railway Nationalization in Canada*, p. 25.

<sup>14</sup>*Ibid.*, pp. 102-3.

<sup>15</sup>*Poor's Manual on Railroads and Banks*, 1930, p. 1204; *Moody's Manual on Railroads*, 1930, pp. 1903-4.

railroads in both countries during the past ten years have reflected momentous changes in the transportation situation. In the United States the drastic shrinkage in traffic resulting from the combined assault of industrial depression and the competition of other transport agencies caused the operating revenues, by 1932, to fall to 50 per cent of their pre-depression level, a shrinkage of three billion dollars. This shrinkage, coupled with the pressure of a heavy burden of fixed charges, changed a combined net income of the industry from a profit of \$900 million in 1929 to a deficit of \$140 million in 1932. Not all roads suffered to an equal degree, but those having more than an average burden of debt were forced into receivership. By the end of 1935, more than one-fourth of the total Class I railway mileage in the United States was in the hands of the courts. Marginal roads fell by the wayside in later years, and at the end of 1939, 109 companies, operating nearly a third of the country's mileage, were in the hands of receivers or of trustees in bankruptcy<sup>16</sup>—the worst financial situation in American railway history. With the exception of a small number of strong carriers, the industry had lost its proud place in American investment. The public purse was once more called to the rescue, after a period of over sixty years of purely private financing. In 1932 the Reconstruction Finance Corporation began making collateral loans to those railroads whose credit would not permit of financing from the ordinary sources. At the end of 1939, the R.F.C. (and the Public Works Administration) had made loans to railroads totalling \$866 million, of which \$400 million had been repaid or resold to the public, leaving a total of \$466 million still outstanding.<sup>17</sup> In addition to its loans, the R.F.C. has also purchased equipment trust certificates and short-term notes from numerous companies. Time will reveal the consequences of this recurrence of public financial aid. Judging from the number of reorganization plans in which R.F.C. loans are to be funded into long-term bonds, the federal government will become a permanent investor in the American railway industry.

Nor have the past ten years been kind to the two large Canadian systems. The Canadian Pacific's earnings dropped to the point where it was forced to discontinue dividends, first on its ordinary

<sup>16</sup>Bureau of Railway Economics, *A Review of Railway Operations in 1939* (Washington, 1940), p. 15.

<sup>17</sup>*Ibid.*, p. 14.

stock, which has enjoyed liberal dividends for many years, then on its preferred stock (except for part payments on the latter in recent years). Although this Company has failed to earn its interest in only one year, 1933, and its working capital has been sufficient to make possible the uninterrupted payment of fixed charges, the possibilities of future financing through stock issue look exceedingly remote. As a result of its diversified services, its well-developed territory, and its relatively conservative financial structure, the C.P.R. has remained solvent. But its proud position as a prosperous carrier is a wistful memory.

The deficits of the Canadian National, substantial under the most favourable economic conditions, increased enormously in the thirties, until they constituted the largest single drain upon the peace-time budget of the Dominion. By the end of 1936, the Canadian National owed the Dominion government a total of \$720 million, while unpaid accrued interest on government loans amounted to \$531 million.<sup>18</sup> The Capital Revision Act of 1937 eliminated this debt and accrued interest so that the Canadian National's balance sheet no longer makes any pretence of showing the investment of the nation in the system.

A Royal Commission on Transportation was appointed in 1931 to study the transportation situation and make recommendations for its improvement. The report is a public document which should be owned and studied by all students of finance and transportation in Canada and in the United States. It led to the Canadian National-Canadian Pacific Act of 1933, which provided for a new Board of Trustees to replace the former Board of Directors of the Canadian National, and for co-operative measures between the two great systems looking toward mutual economies in operation, set up a system whereby disputes arising in connection with co-operative measures were to be settled by special arbitration tribunals, and finally, and very significantly, stated that nothing in the Act should be deemed to authorize an amalgamation of the two railways.

*The Current Situation.* In both the United States and Canada, the "railroad problem" has become one and the same problem, namely, how to increase revenues, decrease expenses, or decrease fixed charges, or a combination of these, so as to regain a position of financial strength. In neither country are increases in passenger

<sup>18</sup>*Annual Report of the Canadian National Railways, 1936.*

revenues, which now amount to only 10 per cent of total revenues in the United States and 11 per cent in Canada, likely to contribute substantially to increased earning power. While they have shown an absolute increase since the bottom of the depression, passenger revenues have continued to be of diminishing relative importance. As for freight revenues, these have recovered about one-third of their depression decline in the United States, and slightly more than one-third in Canada. The revival of the heavy goods industries in both countries, under the stimulus of defence production, will go far towards improving the volume of freight traffic. But the most optimistic cannot envisage a return to pre-depression traffic volume.

Fortunately for the American roads, they were able to cut their operating expenses during the depression and recovery years in almost the same proportion as revenues declined, so that the operating ratio, or ratio of operating expenses to operating revenues, has increased but slightly. But the number of *dollars* left over with which to pay interest and taxes has greatly diminished. Canadian roads entered the depression with a group-operating ratio of 86 per cent—as compared to that of 72 per cent in the United States. By 1940 the ratio stood at 85 per cent, which means that out of every dollar of revenues only 15 per cent is left for the heavy burden of fixed charges. It would take enormous economies, far greater than the million or so per year achieved through co-operative efforts, to make any substantial change in this ratio and to contribute anything to interest.

In both countries, therefore, any substantial financial relief must come through an adjustment of the fixed charges. In the United States this adjustment is taking place, albeit very slowly, through the process of financial reorganization. The carriers in receivership or bankruptcy are, as the expression is, “going through the wringer.” Their debt and interest are being pared down; bondholders are becoming stockholders; stockholders are becoming interested spectators. But the process is slow—so many approvals are required before a plan of financial reorganization becomes effective; so much disagreement takes place as to the bases on which the reorganization should be effected; so much uncertainty exists with respect to the future earning capacity of the industry and of the individual carriers. But eventually, as in the period 1894-1900, the reorganizations will be completed, and, with the

admittedly dead capital written off, the American industry will be able to support a capital structure which has been brought into line with real asset values and earning power. Individual investors, not taxpayers, will have taken the sacrifices. The Interstate Commerce Commission, in passing upon plans of reorganization, is insisting that sinking fund provisions be inserted in new railway bond issues. The effect of this policy will be to reduce the outstanding burden of debt over a period of time.

The Canadian situation presents even more baffling problems. The revision of the capital accounts of the Canadian National may have eliminated figures from the debt total, but it could not recover the losses that had taken place.<sup>19</sup> The financial adjustments made under this Act were very similar to those which would have been made in a reorganization of a private carrier, with two exceptions. In a reorganization under the American Bankruptcy Act, the relative position of the various creditors would have been determined by the court and the Interstate Commerce Commission, and sacrifices would have been made in order of the priority of the obligations. In the case of the recapitalization of the Canadian National, however, the only investor group to make a sacrifice was the Dominion government. Other creditors were not affected. In a thorough-going reorganization of a private American company, the properties would have been transferred to a new company at a valuation set at the time of the transfer. The book value of the properties would have been adjusted to reflect their earning power, or going-concern value. In the recapitalization of the Canadian National, while over one and three-quarter billion dollars of debt and equity were written off, only a quarter of a billion of property investment was eliminated, with the result that the balance sheet now shows a huge surplus—a purely artificial and very misleading figure.

Canada is burdened with a vast property incapable of supporting the billions which have been poured into it. Significant as the

<sup>19</sup>In detail, the adjustments of the Canadian National balance sheet were as follows: elimination of railway stocks owned by the Dominion, \$266 million, Dominion advances and unpaid interest, \$1,175 million, investment in Canadian government railways, \$388 million, miscellaneous liabilities, \$15 million—a total of \$1,844 million written off. This total elimination more than offsets the previous balance sheet deficit of \$905 million leaving a balance of somewhat less than 700 million called "Dominion Government Proprietor's Equity."

economies arising from the co-operation of the C.P.R. and the C.N.R. have been, they are no solution of the problem. I cannot presume to set myself up as an expert on the problem of the C.N.R. Too many other students closer to the problem, in commission reports, books, and articles, have presented far more extensive analyses than I could ever hope to make. But based upon my somewhat intermittent appraisals of the situation I find myself in agreement with those students of the Canadian transportation situation who believe that unified management, elimination of duplicate facilities, and an end to the costly rivalry now endangering the credit of the private line and levying a tremendous toll on the taxpayers to support the government-owned system, is the only feasible arrangement. Such an arrangement would not regain the financial wastes and costs of the past, but it might prevent their continuation in the future. What is needed in Canada as well as in the United States is a dispassionate and scientific reconstruction of the financial structures of the railway companies concerned to reflect the fact of over-investment. Dead capital must be recognized as such, and ruthlessly written off. Only after a thorough financial house-cleaning can the industry as a whole hope to attract the new capital so necessary to its continued progress, if that capital is to come from private investors rather than from the public purse. The task of that house-cleaning is one which commands the most intelligent attention and services of management, investors, and government.

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# PRINCIPAL INTERNATIONAL AND INTER-TERRITORIAL CLASS-RATE STRUCTURES OF NORTH AMERICA

FRANK L. BARTON

THE richest market on the continent of North America is located in the north-eastern portion of the United States. Lying roughly east of the Mississippi and north of the Ohio River, the area, having about 15 per cent of the country's land area, contains in excess of 50 per cent of the population and produces about 70 per cent of the manufactures of the United States.

Bordering upon this region, known as Official or Eastern Territory in transportation parlance, are Southern and Western Trunk-Line freight-rate territories of the United States. Nearby, but not touching Official Territory is Southwestern Territory. To the north Official Territory is bounded by the industrialized portion of the Dominion of Canada, known as Canadian Freight Association Eastern Territory, and designated as Eastern Canada. The boundaries of each of these railroad freight-rate territories may be seen on Chart I.<sup>1</sup>

Necessarily the immense concentration of population and purchasing power in the north-eastern section of the United States attracts a great deal of freight traffic. In this paper some of the principal features of the rail freight-rate structures applying within Official Territory and from Southern, Southwestern, and Western Trunk-Line Territories and Eastern Canada to Official Territory will be examined, i.e. the prevailing class-rate structures. The transportation conditions and cost of rail service accompanying the movement of traffic into Official Territory will likewise be given attention for the purpose of ascertaining whether the prevailing levels of class rates from the outlying regions of the United States to Official Territory are consistent when compared with the class rates from Eastern Canada to Official Territory.

<sup>1</sup>On October 16, 1940, the Interstate Commerce Commission granted the carriers permission to depart from the long-and-short-haul clause (section 4) of the Interstate Commerce Act to remove Zone IV differentials in Southwestern Territory. The revised rates have not yet been published, however.

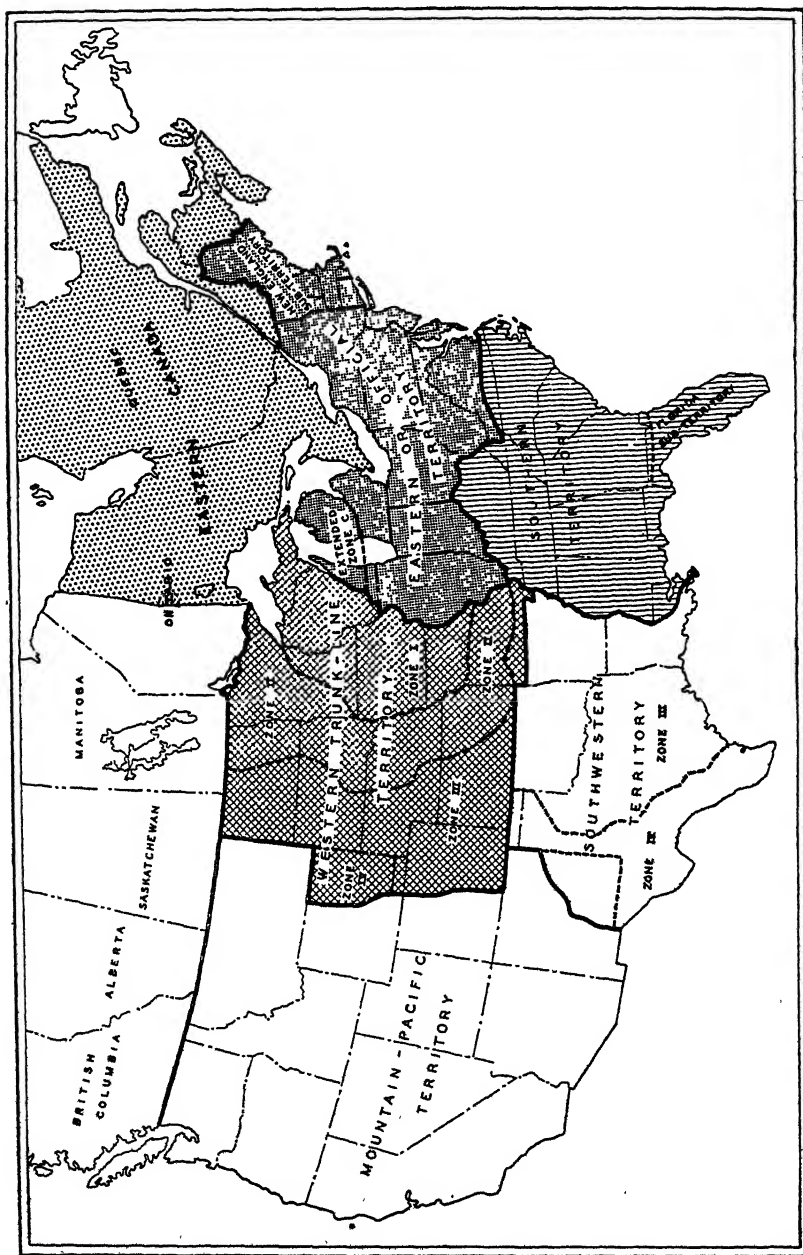


CHART I.—Location of Official Railroad Freight-Rate Territory with Respect to Contiguous Regions of the United States and Canada.

## THE FREIGHT-RATE STRUCTURES

The freight-rate structures are composed in their entirety of class rates, column rates, and commodity rates. All of these have one common attribute: each is strongly influenced by its first-class rate scale.

In the interest of convenience and simplicity all articles of freight are classified and assigned to definite classes in the freight classifications governing the several systems of rates. In the construction of the standard class rates, first class is basic, standing at the head of the list. The remaining class rates bear fixed percentage relationships to the first-class rates; this arrangement constitutes a class-rate adjustment. There are, however, variations and departures from the regular class-rate adjustment which are usually published in the form of column rates and commodity rates. Both column and commodity rates generally conform to the class-rate scheme, although on numerous low-grade articles it is frequently necessary to construct commodity rates on entirely different theories and bases.

Although by far the greatest volume of freight moves on commodity rates, from the standpoint of numbers the majority of articles of freight move on class rates. Especially is this true of manufactured articles of the higher grades.<sup>2</sup> First-class rates thus become the principal descriptive feature and furnish fruitful comparisons of the freight-rate structures under consideration, especially from the standpoint of the effect of rail transport rates on industrial development.

The freight-rate structures applying at present within Official Territory and to Official Territory from Southern, Southwestern, and Western Trunk-Line Territories are, for the most part, predicated upon the bases prescribed by the Interstate Commerce Commission in four general class-rate investigations<sup>3</sup> which ushered in a new era in rate making in the United States dating from January

<sup>2</sup>Because the traffic originating in Eastern Canada is to a greater extent merchandise and manufactured goods than the traffic of Western Canada, there is a wider use of class rates in Eastern Canada (W. T. Jackman, *Economic Principles of Transportation*, Toronto, 1935, pp. 497-8).

<sup>3</sup>These are: *Southern Class Rate Investigation*, 100 I.C.C. 513 (1925) and 3 supplemental reports; *Consolidated Southwestern Cases*, 123 I.C.C. 203 (1927) and 27 supplemental reports; *Western Trunk-Line Class Rates*, 164 I.C.C. 1 (1930) and 8 supplemental reports; and *Eastern Class Rate Investigation*, 164 I.C.C. 314 (1930) and 3 supplemental reports.

15, 1928. The freight-rate structure between Eastern Canada and Official Territory is based, to a great extent, on the present international class-rate adjustment which became effective March 3, 1938, by agreement between the rail carriers concerned.<sup>4</sup> The influence, however, of the regulatory bodies in both the United States and Canada is of significance in formulation of the international class rates.<sup>5</sup>

#### DESCRIPTION OF THE CLASS-RATE ADJUSTMENTS

Intraterritorial class rates within Official Territory have their basis in one basic mileage scale. In the determination of rates this single scale is applied for the entire distance from origin to destination. As subsequent examples will show, the general mileage scale applicable within Official Territory is lower in level and less rapid in gradation than the corresponding scales which apply to that territory from the remaining rate territories of the United States and Eastern Canada considered here.

The interterritorial class rates between Southern and Official Territories have a general basis in the combination of two distance scales: the Southern intraterritorial scale for the distance south of the territorial border, and one of four differential scales for the distance north of the border, the applicable scale being determined in accordance with the distance traversed south of the border.

The general bases for the interterritorial class rates from both Southwestern and Western Trunk-Line Territories to Official Territory are so closely related that one joint discussion for the two will suffice. Western Trunk-Line Territory is subdivided into four principal zones, Zones I, II, III, and IV. Southwestern Territory

<sup>4</sup>Neither the Board of Transport Commissioners for Canada nor the Interstate Commerce Commission has authority outside its own country; consequently neither has complete jurisdiction in regulating or prescribing international rates. For an excellent discussion on this subject consult Jackman, *Economic Principles of Transportation*, chap. xvii.

<sup>5</sup>The I.C.C. has held: "Until we have a mandate from Congress or an interpretation by the courts of the present law necessitating a different course, we shall continue in the view that we should proceed with great caution in an effort to avoid any action which would tend to complicate or hinder the free movement of international traffic. We are not impressed with the theory advanced by the carriers that there may be joint rates and rates from the boundary applicable at the option of shippers" (*Newsprint Paper Investigation*, 197 I.C.C. 738, 776 (1933)).

has two major subdivisions, Zones III and IV, which are counterparts of Zones III and IV of Western Trunk-Line Territory since the class rates within Zones III and IV of each territory are based upon the same mileage scales. Consequently, rates from South-western and Western Trunk-Line Territories to Official Territory are based upon a combination of from two to five different distance scales, depending on the number of zones traversed by the rate-making route from origin to destination. The combinations are made of a common basic scale applied for the entire distance and, depending on the number of zones traversed, from one to four differential scales for the portion of the distance lying in South-western and Western Trunk-Line Territories. The differentials added for corresponding distances in Zones I, II, III, and IV are increasingly higher in accordance with the numerical order of the zones. The resulting rate structure is thus a series of strata constructed by adding differential scales to a basic scale; the composite structure is commonly referred to as a laminated scale.

The international class-rate adjustment applicable between Eastern Canada and Official Territory is founded on a basic distance scale made, as subsequent examination will show, slightly higher than the Official scale. This basis is generally applicable to all points in Official Territory from all points in the industrial areas of southern Ontario and south-western Quebec. There are departures from the basic scale in three instances: first, between New England Zone B Territory and Eastern Canada, Zone B arbitraries are added to the basic scale; second, between Trunk-Line Territory<sup>6</sup> and points in Canada east of Lévis, Diamond, and Megantic,<sup>7</sup> the rates are constructed by adding a specific set of arbitraries to the Montreal rates; third, between Central Freight Association Territory<sup>8</sup> and points in Canada east of Montreal and Mirabel, the Montreal rates plus a similar set of arbitraries are likewise used. The rates constructed in accordance with these exceptions are but slightly higher than rates which would result from application of the basic international scale. No border dis-

<sup>6</sup>Consisting generally of Pennsylvania and states east thereof in Official Territory, exclusive of New England Territory.

<sup>7</sup>Generally, the Maritime Provinces and the Gaspé Peninsula of Quebec.

<sup>8</sup>Composed roughly of Ohio, Michigan, and the states west thereof in Official Territory.

inctions are made in the basis for the international rates,<sup>9</sup> whereas between Southern, Southwestern, or Western Trunk-Line Territories and Official Territory the rates are based, as shown previously, on combinations of mileage scales resulting in the addition of differentials for the distances to or beyond the territorial boundaries.

#### FIRST-CLASS FREIGHT-RATE COMPARISONS

In the preceding discussion a brief description of the general bases underlying the various class-rate adjustments was given. Attention will now be given to specific comparisons of the level and progression of the first-class rate scales to which all other class-rate scales are related in descending orders of percentages. First-class rate scales are further enhanced in importance by their use as a guide in shaping the commodity-rate structure. In recent years the construction of commodity-rate scales on the basis of fixed percentages of first class has become the method most generally employed in making commodity rates. Because of the basic position occupied by the first-class rate scales, comparisons of first-class rates should be fairly indicative of the relative levels of the freight-rate structures in which the first-class scales are incorporated.

Chart II provides a comparison of the relative level and progression of the first-class rate scales which apply within Official Territory and to that territory from contiguous territories of the United States and Eastern Canada. The scales shown begin at 200 miles and run through 1,500 miles. These scales actually begin at 5 miles, but 200 miles was chosen as a starting point for the comparisons because the boundaries of Southwestern and Official Territories do not touch, as may be seen on Chart I.

Since the interterritorial class rates from Southern, Southwestern, and Western Trunk-Line Territories to Official Territory are made by combination of two or more distance scales according to the distances traversed in each territory or zone, a division

<sup>9</sup>The Maritime Freight Rates Act (17-18 Geo. V, c. 44), effective July 1, 1927, provided that the section of the country east of Lévis and Diamond Junction, Quebec, to the seaboard is to be included in "preferred" territory, and "eastern" lines in this territory were required to reduce their rates by 20 per cent, the Dominion government compensating the railroads for these lower rates. This reduction did not apply, however, to all-rail traffic to or from points in the United States (Jackman, *Economic Principles of Transportation*, p. 502).

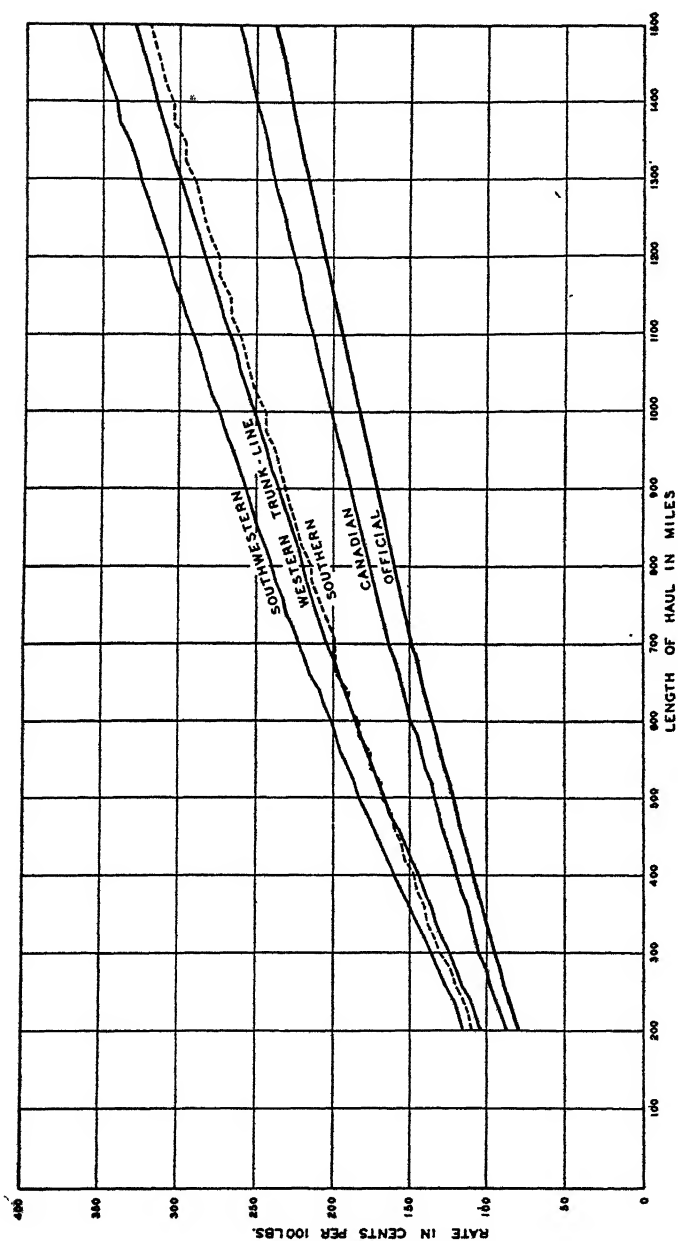


CHART II.—Relative Levels and Progressions of First-Class Rate Scales within Official Territory and to Official Territory from Canadian, Southern, Southwestern, and Western Trunk-Line Territories.

between the territories of the over-all distances is essential to the compilation of a hypothetical scale of first-class rates that will furnish a fair illustration of the relative differences between the several rate schedules. In order to arrive at a reasonable basis of comparison for these scales, therefore, certain assumptions are necessary. Under such circumstances it seems proper to divide the distances equally between the outlying territories, on the one hand, and Official Territory on the other. Such an allocation is on the side of conservatism because under conditions surrounding the movement of interterritorial freight large proportions of hauls probably take place in the territories outside of Official Territory, which are found to have, when compared with the Official level, comparatively high levels of class rates. Because an equal division of hauls affords a conservative comparison of the relative levels of the class rates, this basis was used in preparing the scales shown on Chart II.

Another assumption is necessary in constructing the first-class scales from Southwestern and Western Trunk-Line Territories because of the several differential scales applying to Zones I, II, III, and IV. In making the scales from Western Trunk-Line Territory the average of the differentials for Zones I, II, and III is used as the differential for the portion of the distance traversed before reaching the border of Official Territory. The differential of Zone IV was not used in computing the average because of the limited extent of the Zone IV area. From Southwestern Territory an average of the differentials for Zones II, III, and IV is used, Zone II being included to take care of the distance intervening between Southwestern and Official Territories. Thus, each rate in the interterritorial scales from Southwestern and Western Trunk-Line Territories is constructed by applying the basic scale for the entire distance and adding to the amount so determined the proper differential for the distance to the Official Territory border.

Chart II discloses that there is a similarity in level and progression between the rate structure within Official Territory and that applying from Eastern Canada to Official Territory, although the level of rates applicable from Canada is made approximately 10 per cent higher than the Official scale. The chart also shows there is a wider difference between the rates applicable from Southern, Southwestern, and Western Trunk-Line Territories to Official Territory and the Official scale than exists between the rates from

Eastern Canada and the Official rate scale. Table I contains, for representative distances, several of the first-class rates upon which Chart II is based.

TABLE I  
RELATIVE LEVELS AND PROGRESSIONS OF FIRST-CLASS RATE SCALES  
(Rates Stated in Cents per 100 Pounds)

Distance in miles	Within Official	Eastern Canada to Official	Southern to Official	Western Trunk-Line to Official	South- western to Official
200	80	88	110	105	116
300	96	106	131	124	136
400	109	120	147	144	160
500	122	134	168	166	183
600	135	149	183	185	201
700	149	164	198	204	222
800	160	176	213	219	239
900	171	188	230	234	256
1,000	182	200	243	250	273
1,100	193	212	260	266	290
1,200	204	224	273	282	307
1,300	215	237	289	298	325
1,400	226	249	303	314	341
1,500	237	261	318	328	358
Average.....	163	179	219	223	243
Percentage relation to Official.....	100	110	135	137	149

To illustrate further the differences between the various freight-rate scales, and to demonstrate that the first-class scales of Chart II portray the situation, it may be well to examine and compare a number of first-class rates for specific hauls.

Representative first-class rates from Southern Territory (Table II), Southwestern Territory (Table III), and Western Trunk-Line Territory (Table IV) to Official Territory are compared with similar rates from Eastern Canada to Official Territory and within Official Territory. These comparisons show that for approximately equal distances the first-class rates from points in Southern, Southwestern, and Western Trunk-Line Territories to destinations in Official

TABLE II

COMPARISONS OF TYPICAL INTERTERRITORIAL FIRST-CLASS FREIGHT RATES FROM SOUTHERN TERRITORY TO OFFICIAL TERRITORY WITH CORRESPONDING RATES FROM EASTERN CANADA TO OFFICIAL TERRITORY AND WITHIN OFFICIAL TERRITORY FOR APPROXIMATELY EQUAL DISTANCES

(Rates Stated in Cents per 100 Pounds)

From	To	Miles	First-class rates	Disadvantage of Southern Territory*	
				(in cents)	(in per cent)
Montgomery, Ala...	Springfield, Ohio.....	657	202	—	—
Ottawa, Ont.....	Springfield, Ohio.....	657	160	42	26
New York, N.Y....	Springfield, Ohio.....	657	141	61	43
Nashville, Tenn....	Columbus, Ohio.....	411	153	—	—
Agincourt, Ont....	Columbus, Ohio.....	417	125	28	22
St. Louis, Mo.....	Columbus, Ohio.....	418	111	42	38
Knoxville, Tenn....	Cleveland, Ohio.....	521	173	—	—
Ottawa, Ont.....	Toledo, Ohio.....	529	141	32	23
St. Louis, Mo.....	Cleveland, Ohio.....	522	128	45	35
Montgomery, Ala...	Toledo, Ohio.....	775	217	—	—
Quebec, Que.....	Toledo, Ohio.....	782	176	41	23
Taunton, Mass....	Toledo, Ohio.....	777	143	74	52
Birmingham, Ala. .	Reading, Pa.....	879	229	—	—
Three Rivers, Que. .	Anderson, Ind.....	877	197	32	16
Chicago, Ill.....	Newark, N.J.....	873	167	62	37
Atlanta, Ga.....	Elmira, N.Y.....	931	235	—	—
Sorel, Que.....	Madison, Wis.....	924	198	37	19
Chicago, Ill.....	Worcester, Mass....	933	169	66	39
Charleston, S.C....	Peoria, Ill.....	1,000	251	—	—
Quebec, Que.....	Peoria, Ill.....	1,006	218	33	15
Springfield, Mass. .	Peoria, Ill.....	1,002	178	73	41

\*Amounts by which the rates from Southern Territory exceed the rates from Eastern Canada and within Official Territory.

Tariff authorities: B. T. Jones's 260-C, I.C.C. 3441; B. T. Jones's 450-E, I.C.C. 3316; B. T. Jones's 484, I.C.C. 2448; B. T. Jones's 490-A, I.C.C. 2767; R. A. Sperry's 15-E, I.C.C. 485; W. S. Curlett's 44-G, I.C.C. A-608; W. S. Curlett's 60, I.C.C. A-330; I. N. Doe's 20-C, I.C.C. 362.

TABLE III

COMPARISONS OF TYPICAL INTERTERRITORIAL FIRST-CLASS FREIGHT RATES FROM SOUTHWESTERN TERRITORY TO OFFICIAL TERRITORY WITH CORRESPONDING RATES FROM EASTERN CANADA TO OFFICIAL TERRITORY AND WITHIN OFFICIAL TERRITORY FOR APPROXIMATELY EQUAL DISTANCES

*(Rates Stated in Cents per 100 Pounds)*

From	To	Miles	First-class rates	Disadvantage of Southwestern Territory*	
				(in cents)	(in per cent)
Little Rock, Ark....	Peoria, Ill.....	492	179	—	—
London, Ont.....	Peoria, Ill.....	495	136	43	32
Youngstown, Ohio..	Peoria, Ill.....	493	122	57	47
Little Rock, Ark....	Muncie, Ind.....	584	195	—	—
Ottawa, Ont.....	Defiance, Ohio.....	580	149	46	31
Cleveland, Ohio....	Springfield, Mass....	581	128	67	52
McAlester, Okla....	Peoria, Ill.....	638	201	—	—
Oshawa, Ont.....	Peoria, Ill.....	638	157	44	28
Johnstown, Pa.....	Peoria, Ill.....	631	139	62	45
Texarkana, Ark....	Chicago, Ill.....	746	229	—	—
Montreal, Que.....	Columbus, Ohio.....	738	166	63	38
Reading, Pa.....	Chicago, Ill.....	745	152	77	51
Russellville, Ark....	Sandusky, Ohio.....	829	232	—	—
Quebec, Que.....	Sandusky, Ohio.....	829	182	50	27
Evansville, Ind....	Watertown, N.Y.....	834	163	69	42
Fort Worth, Texas..	Muncie, Ind.....	944	267	—	—
Quebec, Que.....	Muncie, Ind.....	937	197	70	36
St. Louis, Mo.....	Allentown, Pa.....	940	176	91	52
Dallas, Tex.....	Toledo, Ohio.....	1,100	284	—	—
Sorel, Que.....	St. Louis, Mo.....	1,104	216	68	31
Boston, Mass.....	Springfield, Ill.....	1,109	185	99	54

\*Amounts by which the rates from Southwestern Territory exceed those from Eastern Canada and within Official Territory.

Tariff authorities: B. T. Jones's 260-C, I.C.C. 3441; B. T. Jones's 489-A, I.C.C. 3098; B. T. Jones's 490-A, I.C.C. 2767; J. R. Peel's 251-A, I.C.C. 3359; J. R. Peel's 252-A, I.C.C. 3360; W. S. Curlett's 60, I.C.C. A-330; I. N. Doe's 20-C, I.C.C. 250.

TABLE IV

COMPARISONS OF TYPICAL INTERTERRITORIAL FIRST-CLASS FREIGHT RATES  
FROM WESTERN TRUNK-LINE TERRITORY TO OFFICIAL TERRITORY WITH  
CORRESPONDING RATES FROM EASTERN CANADA TO OFFICIAL  
TERRITORY AND WITHIN OFFICIAL TERRITORY FOR APPROXI-  
MATELY EQUAL DISTANCES

*(Rates Stated in Cents per 100 Pounds)*

From	To	Miles	First- class rates	Disadvantage of Western Trunk- Line Territory*	
				<i>(in cents)</i>	<i>(in per cent)</i>
Kansas City, Mo. . .	Indianapolis, Ind. ....	491	149	—	—
Toronto, Ont. ....	Indianapolis, Ind. ....	491	136	13	10
Cumberland, Md. . .	Indianapolis, Ind. ....	488	121	28	23
Des Moines, Iowa . .	Cincinnati, Ohio. ....	560	158	—	—
Peterboro, Ont. ....	Cincinnati, Ohio. ....	560	145	13	9
Baltimore, Md. ....	Cincinnati, Ohio. ....	560	128	30	23
Topeka, Kans. ....	Fort Wayne, Ind. ....	625	184	—	—
Ottawa, Ont. ....	Fort Wayne, Ind. ....	619	155	29	19
Scranton, Pa. ....	Fort Wayne, Ind. ....	620	136	48	35
Omaha, Nebr. ....	Columbus, Ohio. ....	748	187	—	—
Montreal, Que. ....	Columbus, Ohio. ....	738	166	21	13
Fitchburg, Mass. . .	Columbus, Ohio. ....	743	152	35	23
Sioux Falls, S.D. . .	Cleveland, Ohio. ....	852	204	—	—
Quebec, Que. ....	Grand Rapids, Mich.	847	188	16	8
Chicago, Ill. ....	New Brunswick, N.J.	855	167	37	22
Fargo, N.D. ....	Columbus, Ohio. ....	955	231	—	—
Quebec, Que. ....	Anderson, Ind. ....	955	197	34	17
New York, N.Y. . .	Madison, Wis. ....	949	177	54	31
Denver, Colo. ....	Evansville, Ind. ....	1,083	294	—	—
Three Rivers, Que. .	Evansville, Ind. ....	1,082	224	70	31
New London, Conn.	Evansville, Ind. ....	1,088	184	110	60

\*Amounts by which the rates from Western Trunk-Line Territory exceed those from Eastern Canada and within Official Territory.

Tariff authorities: B. T. Jones's 260-C, I.C.C. 3441; B. T. Jones's 490-A, I.C.C. 2767; B. T. Jones's 491-B, I.C.C. 2920; W. S. Curlett's 60, I.C.C. A-330; I. N. Doe's 20-C, I.C.C. 362.

Territory are higher than the first-class rates from Eastern Canada and from origins in Official Territory to cities in Official Territory. The disadvantage of the regions with the higher rates is shown both by the amounts in cents and in percentages by which their rates exceed similar rates from Eastern Canada and Official origins. Thus, the initial example given in Table II shows the freight-rate disadvantages of the Southern Territory producer shipping from Montgomery, Alabama, to an Official destination, Springfield, Ohio, to be 42 cents per 100 pounds, or 26 per cent, when compared with an international movement from Eastern Canada (Ottawa, Ontario) and 61 cents per 100 pounds, or 43 per cent, when compared with an intraterritorial movement within Official Territory from New York City to the same destination.

#### FREIGHT CLASSIFICATION AND CLASS RATES

Freight classification is the grouping of the thousands of articles offered for shipment into a comparatively small number of classes for the purpose of applying class rates. Classification of commodities moving entirely within Official Territory and to that territory from Eastern Canadian, Southern, Southwestern, and Western Trunk-Line Territories is generally governed by three freight classifications as follows:

<i>Freight Movement</i>	<i>Classification</i>
Within Official.....	Official
Canadian to Official.....	Official
Southern to Official.....	Southern
Southwestern to Official.....	Western
Western Trunk-Line to Official*.....	Western

\*From Western Trunk-Line Territory to destinations in Official Territory east of the Illinois-Indiana state line, the Official Classification governs.

Exceptions to the standard classification are provided for application to numerous articles of freight. These exception ratings take precedence over the ratings published in the standard classifications and are generally lower than standard ratings. Exceptions do not, however, cancel the ratings in the classifications but merely supersede them for the duration of the exceptions. While important, the body of exceptions is not sufficiently large to vitiate the classifications.

A discussion has been given of the first-class rate scales. Although the freight traffic that moves on first-class rates is important, most of the freight given class rating is transported at rates lower than first class. This does not invalidate the conclusion that first-class rate scales are fairly indicative of the differences prevailing between the levels of the various freight-rate structures. On the contrary, further evidence of difference in the class-rate adjustments is disclosed by comparisons of the rates for classes lower than first class.

In Table V class ratings on a few articles, picked at random, representative of class-rated freight are given for use in conjunction with Table VI, which presents five groups of comparisons for the regular classes of freight classification. In each of the five groups the class rates from origins in Official, Eastern Canadian, Southern, Western Trunk-Line, and Southwestern Territories are given, in the order named, to a common destination in Official Territory approximately equidistant from the origins in all territories. The composite heading above the body of Table VI identifies the classes, or class ratings, to which the rates shown in the columns beneath are applicable, and also indicates the percentage relationship that each of the classes bears to first class. On the left side of this heading are listed the five territories from which railroad freight rates are quoted to representative destinations in Official Territory. The figures and letters, or combinations of figures and letters, appearing opposite each of these five origin territories designate the classes to which the rates shown in the columns thereunder belong. The last line in the heading shows the percentage of first class which the several classes reflect.

Since the first-, second-, and third-class rates from all territories are like percentages of first class, 100, 85, and 70, respectively, the rates on these classes from origins in all territories appear in the same vertical columns. It may be seen, however, that from all territories the remaining classes do not bear uniform percentage relationships to first class; consequently, in numerous instances, the rates on correspondingly numbered classes are found in different columns. For example, from the first comparison in the initial group of comparisons it may be seen that the sixth-class rate of 31 cents from Corry, Pennsylvania, to Indianapolis, Indiana, appears in the 27.5 per cent column, whereas, the sixth-class rate of 61 cents from

Memphis, Tennessee, to Indianapolis is shown in the 40 per cent column.

Comparisons of freight rates for actual movements of the articles described in Table V may be obtained by the following procedure: first, choose from Table VI an origin point, noting the rate territory in which it is located; next, find in Table V the class rating which applies from this origin on the commodity selected; then, determine from Table VI the rate which applies on the class to which the selected commodity is assigned.

A comparison of the carload rates on radio receiving sets from Trenton, New Jersey, and Houston, Texas, to Peoria, Illinois, provides an example of how these tables may be used. As shown in Table VI, Trenton is located in Official Territory, and Houston is in Southwestern Territory. By reference to Table V the carload rating on radio receiving sets to destinations in Official Territory is found to be third class from origins in all territories. The third-class rate shown in Table VI from Trenton to Peoria is 122 cents per 100 pounds; from Houston to the same destination the third-class rate is 191 cents per 100 pounds. It can be seen that the carload rate on radio receiving sets to Peoria from an origin in Southwestern Territory is 69 cents per 100 pounds higher than the rate from an Official Territory origin equally distant from the common destination. Extending the comparison further it will be found that the carload rate on radio receiving sets from Montreal to Peoria is 136 cents per 100 pounds, or 55 cents per 100 pounds lower than the rate from Houston to Peoria for an equivalent amount of transportation service.

The example is typical. A close examination of the class rates in Table VI reveals that in every case the class rates from the outlying territories of the United States to Official Territory are higher than either the class rates within Official Territory or those from Eastern Canada to Official Territory. What is true of the first-class rates is found to be true for the entire class-rate adjustment.

#### COMPARISONS OF RAILROAD FREIGHT TRANSPORTATION CONDITIONS IN THE UNITED STATES AND EASTERN CANADA

Differences in levels of freight rates may often be explained by the presence of a number of different factors, among them being distribution of the traffic burden, volume of traffic over which the

TABLE V

CLASSIFICATION RATINGS GOVERNING THE DETERMINATION OF FREIGHT RATES  
TO DESTINATIONS IN OFFICIAL TERRITORY ON A FEW ARTICLES  
REPRESENTATIVE OF CLASS-RATED FREIGHT

Articles	Class ratings from					
	Origins in Territories					
	Official Eastern Canada		Southern		Southwestern Western Trunk-Line*	
	C.L.	L.C.L.	C.L.	L.C.L.	C.L.	L.C.L.
Adding or Computing Machines, and Typewriters.....	3	1	3	1	3	1
Bakery Goods, N.O.I.B.N.....	4	3	4	3	4	3
Belting, other than Chain Belting ..	R26	2	4	2	4	2
Candy or Confectionery, N.O.I.B.N.	4	2	50	2	4	2
Carpeting:						
Linoleum; Cork; or Wood Fibre Base, Impregnated and Decor- ated.....	45	3	5	3	A	3
Cellulose Acetate Plastics: In rods, sheets, or tubes.....	3	1	3	1	3	1
Electric Storage Batteries, As- sembled, N.O.I.B.N.....	40	2	6	2	40	2
Insulators, Electric Wire:						
Glass, Pottery, or Pottery and Iron Combined.....	5	3	6	3	5	3
Luggage:						
Hand bags, Travelling bags, Suit cases, and Trunks.....	3	1	3	1	3	1
Radio Receiving Sets.....	3	1	3	1	3	1
Tools, Iron or Steel:						
Hand Bits, Files or Rasps, Hat- chets and Hand Hammers with Handles.....	4	3	4	3	4	3

\*The ratings shown hereunder do not govern the rates from origins in Western Trunk-Line Territory to destinations in Official Territory east of the Illinois-Indiana state line; such rates are governed by the ratings shown in the columns under Official Territory.

NOTE: For explanation of abbreviations and characters see p. 47.

EXPLANATION OF ABBREVIATIONS AND CHARACTERS APPEARING IN THE  
RATING COLUMNS OF TABLE V:

C.L.—Carload ratings. L.C.L.—Less-than-carload ratings. N.O.I.B.N.—Not otherwise indexed by name.

*Figures 1, 2, 3, 4, 5, and 6* mean first, second, third, fourth, fifth, and sixth class, respectively.

*Figures higher than 6*, such as 40 and 50, are class ratings and mean corresponding percentages of first class. *A* indicates class A, which is 45 per cent of first class.

*R26*—means Rule 26 class.

Authorities: Official Classification No. 58, A. H. Greenly's I.C.C. 58; Southern Classification No. 57, E. H. Dulaney's I.C.C. 84; Western Classification No. 69, R. C. Fyfe's I.C.C. 27; and the respective classification exceptions applicable to the class rates shown in Table V.

fixed costs of operation may be spread, and differences in the cost of handling similar traffic.

Canadian railroads have a far greater proportion of their traffic as raw materials and products of agriculture than do American carriers, excepting a few mineral-and-grain-carrying roads of the United States. Because of the comparative scarcity of traffic in Canada consisting of manufactured goods, it would seem that the transportation burden would be distributed to give comparatively high rates on the class-rate traffic to assist in paying for the costs of handling the items of traffic of lesser value, some of which move in greatest volume in a relatively small part of the year.

As a measure of comparison, traffic density is capable of a fairly exact analysis. A study of Table VII reveals that density measured both in tons and in ton-miles is higher per mile of road<sup>10</sup> in Southern, Southwestern, and Western Trunk-Line Territories of the United States than it is in Eastern Canada.

An attempt to ascertain the comparative costs of transporting rail traffic in Eastern Canada and the territories of the United States entails a number of difficulties because of the form of the available statistics. First, the Canadian railways do not divide their systems into Eastern Canada and Western Canada for reporting expenses, making it necessary to use the totals for the country, all rail carriers included. Second, no division is made of expenses between freight and passenger service in Canada, nor between the different types of freight service in either the United States or

<sup>10</sup>Miles of road is the line distance covered by the railroad and may be contrasted with miles of track which includes all trackage in use.

TABLE VI

COMPARISONS OF CLASS RATES TO DESTINATIONS IN OFFICIAL TERRITORY WITH CORRESPONDING RATES WITHIN OFFICIAL TERRITORY  
FOR APPROXIMATELY EQUAL DISTANCES

ORIGIN TERRITORIES	CLASSES									
	1	2	3-R25 3-R25	R26 R26	4	-	-	5	-	6
Official (Off).....	1	2	3-R25 3-R25	R26 R26	4	-	-	5	-	6
Eastern Canada (Can).....	1	2	3	4	4	-	-	6	-	-
Southern (Sou).....	1	2	3	4	-	5	-	7	-	-
Western Trunk-Line (WTL)*.....	1	2	3	4	-	A	-	-	B	C
Southwestern (SW).....	1	2	3	4	-	A	-	-	B	C

PERCENTAGE RELATIONSHIP TO FIRST CLASS										
100	85	70	55	50	45	40	37.5	35	32.5	30
27.5										

(Rates in cents per 100 pounds)

To: Indianapolis, Ind. (Off)										
111	94	78	61	56	50	44	42	39	36	33
125	106	88	69	63	-	50	-	-	-	38
152	129	106	84	76	68	61	57	53	49	46
135	115	95	74	68	61	54	51	47	44	41
152	129	106	84	76	68	61	57	53	49	46

To: Fort Wayne, Ind. (Off)										
143	122	100	79	72	64	57	54	50	46	43
164	139	115	90	82	-	66	-	-	-	49
200	170	140	110	100	90	80	75	70	65	60
216	184	151	119	108	97	86	81	76	70	65
209	178	146	115	105	94	84	78	73	68	63

From Miles

Corry, Pa. (Off)..... 414  
 Stratford, Ont. (Can).... 412  
 Memphis, Tenn. (Sou)... 419  
 Waterloo, Iowa (WTL)... 422  
 Jonesboro, Ark. (SW)... 418

From

Philadelphia, Pa. (Off).... 668  
 Yankleek Hill, Ont. (Can) 678  
 Tuscaloosa, Ala. (Sou)... 665  
 Wichita, Kans. (WTL)... 666  
 Pine Bluff, Ark. (SW)... 678

TABLE VI—Continued

<i>From</i>	<i>To: Chicago, Ill. (Off)</i>											
Lancaster, Pa. (Off).....	727	152	129	106	84	76	68	61	57	53	49	46
Ottawa, Ont. (Can).....	732	168	143	118	92	84	—	67	—	—	—	50
Jackson, Miss. (Sou).....	735	206	175	144	113	103	93	82	77	72	67	62
Pierre, S.D. (WTL).....	736	227	193	159	125	114	102	91	85	79	73	67
Enid, Okla. (SW).....	725	222	189	155	122	111	100	89	83	78	72	67
<i>From</i>	<i>To: Springfield, Ohio (Off)</i>											
Fall River, Mass. (Off)...	861	154	131	108	85	77	69	62	58	54	50	46
Grandes Piles, Que. (Can)	863	193	164	135	106	97	—	77	—	—	—	58
Albany, Ga. (Sou).....	802	216	184	151	119	108	97	86	81	76	70	65
Ellsworth, Kans. (WTL)...	869	230	196	161	127	115	104	92	86	81	75	69
McAlester, Okla. (SW)...	862	240	204	168	132	120	108	96	90	84	78	72
<i>From</i>	<i>To: Peoria, Ill. (Off)</i>											
Trenton, N.I. (Off).....	928	174	148	122	96	87	78	70	65	61	57	52
Montreal, Que. (Can)...	938	194	165	136	107	97	—	78	—	—	—	58
Valdosta, Ga. (Sou).....	935	244	207	171	134	122	110	98	92	85	79	73
Colorado Springs, Colo. (WTL).....	923	267	227	187	147	134	120	107	100	93	87	80
Houston, Tex. (SW).....	928	273	232	191	160	137	123	109	102	96	89	82

\*Rates under classes shown opposite Western Trunk-Line do not apply to destinations east of the Illinois-Indiana state line; to such destinations the rates under the classes shown opposite Official Territory will apply.

### EXPLANATION OF ABBREVIATIONS:

**Off-Official Territory.**

Can—Canadian Territory:

## Call—Canadian Territory: NATION OF FIGURES AND CH

Figures 1 2 3 4 5 6 7

Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 8

WITNESSETH THAT WE HAVE

EXPLANATION OF FIGURES AND CHARACTERS APPEARING IN HEADING OF TABLE:

Figures 1, 2, 3, 4, 5, 6, 7, and 8 mean first, second, third, fourth, fifth, sixth, seventh, and eighth class, respectively.

R25 and R26 mean Rule 25 class and Rule 26 class, respectively. Rule 25 class and third class reflect the same percentage of first class; therefore, they are shown together in the heading of the table.

Letters A, B, and C mean classes A, B, and C, respectively.

Letters A, B, and C mean classes A, B, and C, respectively.

Canada. Third, no separation can be obtained between the cost of international or interterritorial traffic and traffic confined to one country or territory.

Taking cognizance of these difficulties, statistics for all carriers in Canada are used as the figures that would most nearly give an approximation of actual costs. These statistics for Canada, as indicated, include all traffic in Canada regardless of type of traffic and handling location in the Dominion. To obtain an estimate of

TABLE VII  
TRAFFIC DENSITY COMPARISONS BETWEEN EASTERN CANADA AND THE  
UNITED STATES

*A.—Average Tons of Freight Per Mile of Road, 1939*

Area	Miles of road*	Tons per mile of road†	
		Originated‡	Terminated‡
New Brunswick.....	1,873	1,138	959
Nova Scotia.....	1,397	4,936	4,259
Ontario.....	10,657	1,760	2,515
Prince Edward Island.....	286	511	784
Quebec.....	4,853	1,805	1,757
Eastern Canadian provinces....	19,066	1,924	2,271
Official Territory§.....	63,886	7,573	8,170
Southern Region.....	38,466	3,135	2,631
Western District.....	131,679	2,258	1,947
All U.S.—Class I carriers.....	234,031	3,853	3,758

\*On December 31, 1938. Dominion Bureau of Statistics, *Statistics of Steam Railways of Canada, 1938*, pp. 8-9; Interstate Commerce Commission, *Statistics of Railways in the United States, 1938*, pp. S-164-5.

†Computed from revenue freight traffic. Dominion Bureau of Statistics, *Summary of Monthly Railway Traffic Reports, 1939*, p. 3; and Interstate Commerce Commission, *Freight Commodity Statistics of Class I Steam Railways, 1939*, Statement 4019, pp. 2-5.

‡Canadian figures are loaded-at-station (originated) and unloaded-at-station (terminated) in provinces named; receipts and deliveries to foreign connections are not included.

§Official Territory as used here is the total of Eastern District and Pocahontas Region. Southern Region, statistical, corresponds roughly to Southern Territory in rate parlance; Western District, for statistical purposes, includes Southwestern, Western Trunk-Line, and Mountain-Pacific rate territories.

TABLE VII—Continued

*B.—Net Ton-Miles Per Mile of Road<sup>11</sup>*

<i>Area</i>	<i>Average</i>
Atlantic coast to Lévis.....	443,000
Quebec to Detroit and Sudbury.....	1,118,000
All Eastern Canada.....	902,000
Official Territory.....	3,759,000
Southern Region.....	1,536,000
Western District.....	1,333,000
All U.S.—Class I carriers.....	2,028,000

the amount of expenses incurred by freight operations, operating expenses are divided by means of four methods, three of which are separate and distinct from one another and the fourth a combination of portions of two of these methods.

Each of the four methods is applied to Canadian figures and to figures for the United States and its three main rate subdivisions. The combination method gives results which, when applied to the United States figures, most nearly approach the known figures for freight operation as reported in *Statistics of Railways in the United States, 1938*. Because the combination method gives results that compare closely with known figures for freight operations in the United States, it is here taken to be the most nearly accurate and is used for all comparisons made between Eastern Canada and the United States.

The first method considered is that of assuming that freight operating expenses would reflect the same percentage of total operating expenses as freight revenues are of total revenues. This gives about 14 per cent higher freight expenses than the available United States experience would justify.

The second method consists of assuming that freight operating expenses would amount to the same percentage of total operating expenses that freight locomotive-miles are of total locomotive-miles.

<sup>11</sup>Canadian figures taken from *Report of the Royal Commission to Inquire into Railways and Transportation in Canada* (Ottawa, 1932), pp. 34-5. According to the Dominion Bureau of Statistics, these are the latest figures available in this form. As the Canadian figures are apparently for 1929, United States figures for 1929 are shown.

This measure gives results nearly 10 per cent less than the allocation based on statistics gathered from United States railroads.

A similar division based on the relation of freight car-miles to total car-miles gives fully 21 per cent above what experience in the United States indicates.

The combination method is arrived at by three steps: (1) dividing the cost of maintenance-of-way and structures, maintenance of equipment, and traffic expenses by the percentage that freight car-miles is of total car-miles (since these items are closely governed by the number of cars of traffic handled); (2) the share of freight expenses for transportation-rail line, transportation-water line, miscellaneous operations, general expenses and transportation for investment (credit) was obtained on the basis that freight locomotive-miles is of total locomotive-miles (because these items are governed closely by the number of trains handled); (3) estimated total freight operating expenses are then obtained by combining the two figures resulting from the two computations made above. On this basis the estimated freight expenses are found to have a possible maximum error, based on United States experience, of about 4 per cent. (Note Table VIII.)

After arriving at total estimated freight operating expense, it then is necessary to reduce that expense to a common unit of work performed. The three units customarily so employed are expense per gross ton-mile, expense per (net) revenue ton-mile, and expense per loaded freight car-mile. An examination of Table IX discloses that the Canadian costs per unit of work are higher than in any of the three regions of the United States used for comparison.

In the consideration of operating expenses no account has been taken of two important items of overhead expense, taxes and fixed charges. For Canadian roads in 1938 taxes and fixed charges are equal to 36 per cent of the operating expenses, while for the entire United States these two items are 35 per cent as large as operating expenses there. The percentage for the United States is close to that of each of its territories: Official Territory, 37 per cent; Southern Region, 34 per cent; and Western District, 33 per cent. In view of the fact that fixed charges and taxes in Canada are no lower than in the United States it seems reasonable to assume that the total of all expenses, operating as well as overhead, per unit of traffic is higher in Canada than it is on the railroads of the United States.

TABLE VIII  
ESTIMATE OF FREIGHT PROPORTION OF OPERATING EXPENSES—1938

	Canadian carriers	UNITED STATES CLASS I CARRIERS			Total
		Official Territory	Southern Region	Western District	
Freight operating expense.....	*	\$ 906,011,619	\$265,139,189	\$ 796,475,527	\$1,967,626,335
Total operating expense.....	\$295,705,638	\$1,262,487,055	\$357,486,929	\$1,102,225,023	\$2,722,199,007
Per cent freight of total.....	—	71.76	74.17	72.26	72.28
<i>Revenue division basis</i>					
Freight revenue.....	\$255,935,561	\$1,357,786,853	\$397,327,021	\$1,186,426,515	\$2,941,540,389
Total revenue.....	\$319,972,983	\$1,685,400,530	\$471,305,776	\$1,408,784,447	\$3,565,490,753
Per cent freight of total.....	79.99	80.56	84.30	84.22	82.50
<i>Locomotive-miles division basis</i>					
Freight locomotive miles.....	52,484,550	295,628,300	105,506,347	291,623,116	692,757,763
Total locomotive miles.....	87,444,049	460,750,232	162,012,214	445,892,466	1,068,654,912
Per cent freight of total.....	60.02	64.16	65.12	65.40	64.83
<i>Car-miles division basis</i>					
Freight car miles.....	1,769,787,848	8,589,454,856	2,850,593,703	8,821,135,483	20,261,184,042
Total car miles.....	2,023,602,506	9,832,991,359	3,257,627,144	10,002,498,190	23,093,116,693
Per cent freight of total.....	87.46	87.35	87.51	88.19	87.74

\*Not available.

SOURCE: Interstate Commerce Commission, *Statistics of Railways in the United States, 1938*;  
Dominion Bureau of Statistics, *Statistics of Steam Railways of Canada, 1938*.

TABLE IX  
OPERATING COSTS PER UNIT OF TRAFFIC—1938

	Canadian carriers	UNITED STATES CLASS I CARRIERS			
		Official Territory	Southern Region	Western District	Total
<i>Operating expenses divided on the several bases shown in Table VIII</i>					
Revenue basis.....	\$286,535,000	\$1,017,080,000	\$301,361,000	\$928,204,000	\$2,245,814,000
Locomotive-mile basis.....	177,483,000	810,012,000	232,795,000	720,855,000	1,764,802,000
Car-mile basis.....	288,624,000	1,102,782,000	312,887,000	972,082,000	2,388,457,000
Combination basis*.....	215,086,000	936,323,000	268,576,000	834,580,000	2,039,535,000
<i>Units of traffic used</i>					
Gross ton-miles (excl. loco. and tend.)....	70,138,703,573	347,806,844,068	106,529,930,450	334,345,218,328	788,681,992,846
Revenue freight ton-miles.....	26,894,696,695	141,240,462,525	38,133,950,960	110,709,957,154	290,084,370,639
Loaded freight car-miles.....	1,159,590,849	5,139,230,443	1,729,943,879	5,326,858,410	12,196,032,782
<i>Operating expense per gross ton-mile</i>					
Revenue basis.....	\$0.00337	\$0.00292	\$0.00283	\$0.00278	\$0.00285
Locomotive-mile basis.....	0.00253	0.00233	0.00219	0.00216	0.00224
Car-mile basis.....	0.00369	0.00317	0.00294	0.00291	0.00303
Combination basis.....	0.00307	0.00269	0.00252	0.00250	0.00259
<i>Operating expense per revenue freight ton-mile</i>					
Combination basis.....	\$0.00802	\$0.00662	\$0.00704	\$0.00754	\$0.00703
<i>Operating expense per loaded freight car-mile</i>					
Combination basis.....	\$0.18548	\$0.18200	\$0.15525	\$0.15667	\$0.16723

\*Combination basis, as explained in the text, is a division of maintenance-of-way and structures expenses, maintenance of equipment expenses, and traffic expenses on the car-mile basis, together with a division of transportation-rail line expense, transportation-water line expense, miscellaneous operations expense, general expenses, and transportation for investment (credit) on the locomotive-mile basis.

SOURCE: Dominion Bureau of Statistics, *Statistics of Steam Railways of Canada, 1938*;

Interstate Commerce Commission, *Statistics of Railways in the United States, 1938*.

In arriving at the conclusion that the cost per unit of business is higher on the railways of the Dominion than on the roads of the United States, recognition is given to the breadth of some of the estimates used and to the fact that definite comparisons between identical items are not always possible. Too, all carriers in Canada are of necessity included, while only Class I carriers are considered in the United States.

It is not possible at present to compute the cost of railway transportation for Eastern Canada alone because the Canadian carriers do not make such a geographic division of their systems for the purpose of reporting expenses. Because of this situation, the relative level of costs which are computed for the Dominion as a whole are taken as fairly indicative of the level of costs for Eastern Canada.

The general conclusion is that the levels of class rates applying to Official Territory from Southern, Southwestern, and Western Trunk-Line Territories, and Eastern Canada are apparently made with no relation to density of traffic or costs of railroad operation within the territories from which the class rates apply.



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## SOME BASIC PROBLEMS IN THE PUBLIC REGULATION OF TRANSPORTATION

G. LLOYD WILSON

I AM very grateful for the privilege of addressing this group of scholars and students because it affords me an opportunity to pay my respect to Professor William T. Jackman, the distinguished scholar and kindly gentleman who has served your university with great distinction for so many productive years. Professor Jackman's writings upon transportation economics are known, used, and respected wherever transportation is studied. I have encountered students who have studied under him in Great Britain, in Canada, and in the United States, and all have been gratefully enthusiastic in their praise of him as a teacher and guide. His former students who have come to the University of Pennsylvania to continue their graduate work in transportation have been distinguishable because of their sound training and the open-mindedness of their point of view.

For many years I have looked to him for aid in supplying some of my deficiencies in fact or in the understanding of problems in transportation economics. On a number of occasions I have written to him asking for obscure factual data or difficult interpretations and in every instance I have received promptly answers to my queries in detail and in his lucid style and legible longhand.

In an age when destruction, self-interest, and hate are rampant, it is singularly heartening to have the privilege of expressing publicly appreciation of the work and spirit of one whose constructive attitude, generous spirit, and helpful friendliness is so conspicuous. We in the United States pay our homage to one who personifies the best traditions of the scholar and the gentleman.

I have not the audacious foolhardiness to venture to instruct you upon the problems which confront us in transportation economics and regulation. Rather, I come before you to convey the appreciation and respect of my colleagues at the University of Pennsylvania and in the United States for Professor Jackman, and to bespeak the attention of scholars in Canada and in the

United States to an analysis of the economic and governmental problems in the regulation of transportation utilities. These questions require the careful study and courageous adoption of policies directed toward the solution of some of the most urgent problems. The study of experts in economics and government is required in order to contribute toward a more thorough appreciation of these problems, and in order to obtain more adequate data for the consideration of appropriate measures for the relief of the critical situations. Courageous statesmanship is then necessary to draft and enact the legislation necessary to achieve the improvements. It goes without saying that there is no panacea for all of these problems and no hope of permanent solutions, but these considerations must not dissuade us from attempting to find and apply measures designed to improve the intolerable conditions which now beset the transportation industries.

It is not possible to rank these problems in the order of their importance nor to isolate each problem from others because many, if not all, of them are interconnected. We can hope only to consider in random order some of the problems that appear to be basic.

*The Regulation of Competition.* We may well begin with the regulation of competition. To what extent should competition between carriers of the same and of different types be permitted to compete with those of the same and different types? Should this competition be controlled or eliminated entirely, or should all carriers, or carriers of certain types, be allowed to compete freely with each other? Should regulation be used as a substitute for competition, or should regulation be relied upon to keep competition within bounds? If so, within what bounds?

It appears that there are several camps in which those who have written and spoken publicly and in private conferences may be divided. A first group includes those who are convinced that public regulation should be exerted only in order to enforce reasonable safety regulations and other safeguards to protect the public in their contacts with the carriers and to permit the services, rates, and business practices of the carriers to be determined by the action of the forces of competition. They are persuaded that the weak carriers will be eliminated by the competition with the strong, that services will be improved by the spur of competition, and that rates will tend to a level dictated by the requirements of the least

efficient carrier whose services are required by the public to perform each type of service. This group would rely upon a laissez-faire policy in order to have government interfere as little as possible with economic activities.<sup>1</sup>

The spokesmen of this group appear to ignore or to depreciate the importance of several basic considerations. First, the history of intercarrier competition is strewn with examples that indicate that in the competitive struggle the weak carriers are not always eliminated, but that the relatively strong carriers are often crippled. The weak carriers, including those in bankruptcy or receivership, are relieved of the payment of dividends or interest. They may defer, and often have deferred, maintenance, fallen behind in wage payments or have borrowed money to meet payrolls, and have deferred payments for materials and supplies. Such carriers can cut rates below real costs of operation and force solvent carriers to meet the competition at rates below out-of-pocket costs until the solvent carriers are threatened or overtaken by ruin. In the savage railroad rate wars of the past, in the bitter steamship rate struggles, and in the continuous motor carrier rate warfare of more recent memory, the weak carriers in desperate financial condition have been able to cut rates at the expense of security owners, creditors, employers, and the public.

Another consideration, ignored or depreciated by those who would rely upon competition as a regulator, is that the unsuccessful carriers eliminated in the competitive struggle are not the only losers, if indeed they are the real losers. Those upon whom the losses ultimately fall are often the creditors, investors, lessors, employees, or others who willingly or unwillingly have trusted the carriers, often not wisely but too well.

It is not clear that unfettered competition will improve the quality of the services offered to the public. The generalization is often advanced that the spur of competition urges competitors to improve their services in order to capture the patronage of the public. If competition is unfettered there is danger that the service in areas where large quantities of traffic are available will be overserved, and other areas, where the total amount of traffic is so slight as to offer inadequate rewards to those who serve, will

<sup>1</sup>See comments of Lloyd G. Reynolds, "Cutthroat Competition" (*American Economic Review*, Dec., 1940, pp. 736-47) for discussion of cutthroat competition in industry.

be underserved. In the process of the struggle there is danger that necessary maintenance and new equipment may be deferred so that costs may be cut to the minimum in order to obtain a competitive rate advantage.<sup>2</sup>

The second camp of protagonists in the contentious field would go to the opposite extreme and would substitute public regulation for competition, excepting for the competition offered by alternative services afforded by private operators who are not subject to regulation. This would result in the granting of monopolies to various types of instrumentalities, and substitute public regulation for the regulatory force imputed to competition.

It seems fruitless to discuss this method of regulation for all types of transportation carriers because of the variations in the size and condition of competition among the various types of instrumentalities of transportation. In the case of the large carriers representing hundreds of millions of dollars as investment, employing many employees, and serving fairly well-defined territories, such substitution appears to be less of a problem than in the case of smaller carriers, representing smaller property investments, employing fewer employees, and serving territories at best vaguely defined. The elimination of all competition among carriers of the same type and among carriers of different types appears to be impossible unless accompanied by a very considerable amount of nationalization of all types of carriers. This problem then becomes merged in the larger problems of public ownership and operation of transportation utilities, and, possibly of other industries. An objection to this scheme of regulation is that it tends toward the cartelization of the instrumentalities of transportation.

A third group advance the view that competition should be limited but not eliminated, and that regulation should not be the substitute for competition but its monitor. This point of view is based upon the conclusion that competition is, and has generally in the past been, an ineffective means of protecting the public interest in transportation, often producing over-supply of services and facilities, rate cutting, impairment of facilities and equipment

<sup>2</sup>A discussion of the disadvantages of "monopolistic mechanisms" is found in the statement of E. Hjalmar Bjornson, issued by the Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D.C., Jan., 1941.

by encouraging deferment of maintenance, and paving the way to discrimination among patrons.<sup>3</sup>

This school of thought would rely upon public regulation to prohibit certain competitive practices and to restrict competition by use of regulatory devices, and rely upon competition within these restricted limits to act as an incentive to achievement of improved service. Competition would be restricted to service competition among carriers whose total facilities were not in excess of reasonable requirements of the public to be served in so far as the public need for services can from time to time be estimated; and to rate competition within the levels of minimum rates equal to or in excess of the out-of-pocket costs of the carriers and of maximum rates regulated by public regulation at amounts equal to fair return upon fair value of the property devoted by the carriers to public service or at what the traffic will bear. Relative fairness of rates among shippers would be preserved by forbidding unjust and unreasonable discrimination among persons, places, or commodities, and the undue or unfair preference of individual shippers, groups of shippers, sections, communities, or types of traffic as compared to others.<sup>4</sup> If this point of view with respect to carrier regulation and competition be the basis of regulatory policy, several basic applications of these principles appear to be necessary in order to make the policy effective.

The policy must be enunciated and made the law of the land by legislation which will provide for the regulation of all instrumentalities of public transportation. Such legislation should provide, I venture to suggest, for the following additional major features of regulation.

*The Regulatory Commission and Its Personnel.* A public regulatory body should be established, to be selected from persons fitted by training, experience, and temperament to administer the law. The members of this Commission might be chosen from the members of particular political parties who have established their qualifications by examination, preferably of the unassembled type and have been placed upon a panel from which prospective members

<sup>3</sup>Emory R. Johnson, *Government Regulation of Transportation* (New York, 1938), chap. xxvi.

<sup>4</sup>Wheeler-Lea Transportation Act, 1940, Public no. 785, 76th Congress, 3rd session, table I, section 1.

of such administrative bodies may be drawn for consideration and appointment, when vacancies occur in the Commission.

*Regulative Policy in Legislation.* The legislation should be so drafted as to provide a declaration of national transportation policy based upon the "fair and impartial" regulation of all instrumentalities of transportation, the appropriate recognition and preservation of the "inherent" economic rate and service advantages of each type of carrier, the protection of all carriers against rate-cutting below out-of-pocket costs and against unfair trade practices; the protection of shippers and consignees against excessively high and relatively discriminatory rates; the protection of the interests of carrier employees against unfair wages and inequitable working conditions in the same or different transportation utilities and in comparison with wage and working conditions in other industries; the use of transportation facilities of various types in the fields of service in which they are relatively most efficient through co-ordination; the assurance of a system of transportation comprising various types of carriers affording adequate local and joint services and rates required by commerce, the postal service, national defence, and public recreation and welfare, in so far as public assistance is necessary and desirable for the promotion of the public interest, and the reasonable assurances of a fair return upon fair value of the property devoted to the public service. In calculating such return due consideration should be given to prevailing return upon capital used in economic enterprises.

These elements of policy may appear to be statements of unattainable ideals, but unless progress is made toward the attainment of these ideals, it is fruitless to undertake any improvements in transport regulation. An approach to this declaration of policy is found in the Transportation Act of 1940.<sup>5</sup>

*The Regulation of Entry and Exit of Carriers.* The improvement of conditions in transportation appears to require the regulation of those who enter and those who leave the field. These aspects of regulation are particularly distasteful to those who would leave the regulation of transportation largely if not entirely, to "natural economic law." They urge that the entrepreneur alone should judge when to enter and leave a field of economic enterprise. In the transport field, however, the public interest requires that the services be adequate and that prices be fair for users and producers

<sup>5</sup>*Ibid.*

alike. What can be lost if the claims of those seeking to enter the field be submitted to a competent and objective public regulatory body so that this body may consider whether the tests of public convenience and necessity have been met, and that the interests of all the public, including, among other interests, those of the existing and prospective carriers, are served by the proposed service? Is it not possible that if this policy be pursued many unwise and ill-considered promotional projects might never come into being and the public be spared the economic loss attendant on the failure of unwise and unnecessary enterprises, as well as the adverse effects of oversupply of transport facilities?<sup>6</sup>

In like manner, exit from the field should be controlled in order to prevent interruptions of necessary services and sudden withdrawal from service before replacement services can be established. The regulatory Commission, it is urged, should permit curtailment of service or abandonment of facilities if it can be shown beyond reasonable doubt that the enterprise cannot be profitably operated without undue impairment of the resources of the property as a whole, or if the communities served no longer require service, or if substitute services can be provided by others, but the public should be protected against unnecessary curtailments or unwarranted or unduly sudden abandonments.

In protecting the public, including existing carriers against excessive and unwarranted competition, it is suggested that existing carriers should be accorded the privilege of transporting all the traffic that they can handle adequately, efficiently, and economically, but that additional carriers or facilities should be permitted to enter the field if existing carriers are unable or unwilling to meet these standards.<sup>7</sup>

*Minimum Rates of Transportation.* The regulation of the minimum rates of transportation appears to be necessary and desirable in the public interest for the following reasons:

- (1) Carriers sometimes tend, in the eagerness of competition,

<sup>6</sup>An excellent discussion of capacity and excess capacity is to be found in J. M. Cassels, "Excess Capacity and Monopolistic Competition" (*Quarterly Journal of Economics*, May, 1937).

<sup>7</sup>For a discussion of the control of carriers by means of certificates of public convenience and necessity see D. E. Lilienthal and I. S. Rosenbaum in the *Yale Law Journal*, vol. XXXVI, 1926, p. 163; and *Annual Reports* of the Interstate Commerce Commission.

to reduce rates below their out-of-pocket costs for certain items of traffic in the hope that they may be able to secure the business from their competitors and ultimately increase the rates to compensatory levels meanwhile charging off the operating loss as "promotional expenses."

(2) Carriers sometimes do not know their unit costs of performing various transportation services, either because of lack of experience in handling cost data or because of reluctance to take the time and trouble to work out cost formulae.

(3) The performance of many transportation services at the same time and in the same figures tends to increase the difficulty of cost computation because of the operation of the principle of joint cost.

(4) The computation of costs is complicated by the operation of the principle of increasing and decreasing unit costs within various areas of volume of traffic which appear to differ greatly among different forms of transportation and also among carriers of the same type although more data are needed to throw additional light upon this problem.

(5) It appears not to be in the public interest to regulate minimum rates for the transportation of the same goods between the same points by one form of transportation and not regulate the movement of identical goods between identical points by other instrumentalities of transportation.

(6) Insolvent carriers which are not paying dividends or interest upon their funded debt, and carriers which are operating in desperation deferring the payment of materials and even labour, are in a position temporarily to reduce rates far below full costs of operation.

(7) In many small transportation enterprises, particularly in the case of motor freight carriers, carriers have sufficient business connections in one city to obtain an adequate volume of traffic from that city to the city or cities at the other extremities of their lines, but often are unable to obtain sufficient traffic in the reverse direction. These carriers frequently reduce their rates to operating expenses, then to levels sufficient only to pay for gasoline and oil and finally, if necessary, to rates even below this level in order to obtain anything for the return movement. The inevitable consequence of this is that the rates of all carriers are threatened with reduction to a return-load basis.

(8) The fixing of transportation rates upon the basis of marginal

costs is confronted with the difficulty that few carriers, particularly smaller motor carriers, have any idea of the operation of the principle of marginal costs. It is doubtful whether if it were known that the rates were being reduced below marginal costs that the carriers would pursue this policy, although evidence on this point is not conclusive.<sup>8</sup>

*Maximum and Actual Rate Regulation.* When the Act to Regulate Commerce was enacted in 1887 the principal objectives were to protect shippers and consignees, especially those served by only one line of railroad, from charging exorbitantly high rates and unjustly discriminatory rates as compared with rates available to other shippers, communities, or descriptions of traffic. The protection of shippers against excessively high and unjustly discriminatory rates was undertaken by the Interstate Commerce Commission under the original Act and its amending Acts down to 1920. During these years the Commission sought and obtained bit by bit additional statutory grants of power from Congress through the amendments to the Interstate Commerce Act and interpretations of these powers by decisions of the United States Supreme Court. The early decisions of the Court restricted the Commission's rate regulatory powers, but after 1906 the decisions and amendments to the Act generally tended to increase its authority over rate making. In 1920, Congress in the Transportation Act vested in the Interstate Commerce Commission the authority to prescribe minimum as well as maximum rates of carriers subject to the jurisdiction of the Commission. In 1935, the Motor Carrier Act gave the Commission similar jurisdiction over interstate motor common carriers subject to federal regulation, and the Transportation Act, 1940, confers comparable rate authority upon the Commission to regulate the rates of common carriers by water in interstate commerce. Common carrier petroleum pipe lines' rates and charges in interstate commerce have been subject to regulation by the Commission since interstate petroleum pipe lines were brought under the Commission's jurisdiction by the Hepburn Act of 1906. The rates of common carriers by air are regulated by the Civil Aeronautics Board.<sup>9</sup>

<sup>8</sup>The regulation of minimum rates is discussed in S. J. Wettrock, "Regulation of Competition" (*I.C.C. Practitioners Journal*, Feb., 1941, p. 323).

<sup>9</sup>For a summary discussion of the rate-regulatory powers of federal regulatory bodies prior to the Wheeler-Lea Act, 1940, see E. R. Johnson, G. G.

The power to regulate maximum and actual rates appears to be necessary and expedient particularly if the number of carriers granted authority to serve the public is limited by requiring certificates of public convenience and necessity.

In recent years the regulation of maximum rates has become of little importance because of the excessive competition among carriers of the same and different types, and because of the ability of shippers to operate private transportation facilities particularly in highway and water transportation. The threat of the alternative use of private facilities acts as an effective ceiling over common carrier rates. The possibility of the use of contract carrier services, only the minimum rates of which are subject to regulation, is another effective means of protecting shippers against rates higher than shippers consider reasonable.

*Standards of Service.* One of the most perplexing problems in transport regulation is that of standards of service. Minimum standards of safety appliances, equipment, cargo, and personal liability and property damage insurance deemed necessary to protect shippers and the general public appear to present no insuperable difficulties excepting care in formulating the standards and the exercise of eternal vigilance in their enforcement. Beyond this, the areas of difficulty increase. There is a fairly close relationship between standards of service and rates and charges, although the directness of this relationship is a matter of conjecture. Moreover, the nature of the services rendered by many types of carriers,<sup>10</sup> particularly in the field of motor transportation, differs so greatly that pricing becomes an elaborate problem. Differences in frequency of services, speed, deliveries at times and places to suit the convenience of patrons, differences in quantities shipped at one time, special movements to please shippers or to woo further patronage, and other variations make uniform rate making and regulation difficult in the extreme. Some close observers and careful students of the problem believe these differences so numerous and so substantial as to make uniform rate regulation impracticable in motor transport and possibly in other fields such as water trans-

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Huebner and G. Lloyd Wilson, *Transportation: Economic Principles and Practices* (New York, 1940).

<sup>10</sup>The regulation of standards of service generally in public utility industries is discussed in G. Lloyd Wilson, J. M. Herring and R. B. Eutsler, *Public Utility Regulation* (New York, 1938), chap. ix.

portation. Although I cannot concur in this conclusion, I am acutely aware of the difficulties from my own experience.

*Employees and Labour Costs.* The transport workers,—supervisory, clerical, and mechanical—skilled and unskilled, in all departments and in all parts of the country, have a vital interest in the improvement of transportation facilities and services. Any improvements considered in transportation must be planned with due regard to fair wages, good working conditions, the recognition of the representation of workers to collective dealing with management, the establishment of agreements binding upon the management and upon workers, and with the least possible dislocation and termination of employment of transportation workers consistent with efficient operation of the carriers. Protection must be given by the government to the employees and to investors, as well as to the users of carriers' services.

Labour costs represent large percentages—often 50 per cent or more of the costs of operation of transport carriers. The public interest requires that the distribution of the earnings of transportation carriers be adequately and fairly distributed upon capital and labour used in public service. If one regulatory commission is to be held responsible for standards of service, rates, revenues, and capital structures, it does not seem unreasonable that this body should have a voice in regulating labour costs.

*Pooling.* The pooling of traffic or earnings among carriers, when in the interest of improved service or reduced expenses of operation of the carriers without impairment of the quality of service offered the public, it appears clear, should be permitted with the approval of the public regulatory body, and subject to the rules and regulations prescribed by the Commission.<sup>11</sup>

*Co-ordination.* So much has been written and said about co-ordination of transportation facilities that the subject is apt to be tedious, and yet less progress has been made in actually developing co-ordinated services by rail, water, highway, air, and pipe-line than has been hoped by the advocates of better integration of transport facilities. The co-ordination of transportation requires that each form of transport facilities be used in the types of services in which they are relatively most efficient in services or in rates, and that joint services be offered shippers by different types of carriers in combinations of co-ordinated services at through joint

<sup>11</sup>Provided for in Interstate Commerce Act, part 1, section 5 (1).

rates. The development of co-ordination appears to require several elements: (1) the comparative analysis of the services rendered by different agencies of transportation; (2) the study of costs of performing different types of transportation services by various agencies of transportation; (3) the impartial regulation of different kinds of carriers; (4) the regulation of competition among carriers of the same and different types; (5) the regulation of rates of the co-ordinated carriers; (6) the regulation of the division of joint rates among the carriers participating in co-ordinated operations; and (7) the control by the Commission of the routing of freight by shippers and consignees which might be used as a device to defeat the development of co-ordinated service.<sup>12</sup>

*Public Aid and Taxation.* The further development of co-ordination and the improvement of transportation efficiency requires careful and critical examination of the aid which has been given in the past and which is now being granted to various agencies of transportation. This is necessary in order to ensure that public funds are not being wastefully granted to assist high-cost or inefficient carriers where lower cost and more adequate carrier services are available to supply transport requirements of various kinds.<sup>13</sup> The vexing problem of determining what taxes are now levied and what should be levied upon carriers of different types and upon transportation facility users, must also be investigated. It is to be hoped that the Board of Investigation Research established by the Transportation Act, 1940, to study the relative economy and fitness of carriers of various types, the public aids to transportation, and the taxes imposed upon carriers of various types, will assist in shedding additional light upon these problems in which much heat has been engendered in proportion to the amount of light shed in the contentious discussions in recent years.

*Financial Reorganization and Consolidation.* In concluding this survey of some of the outstanding unsolved problems in the field of transportation regulation, two of the most widely discussed problems have been omitted—purposely and deliberately—first,

<sup>12</sup>For a discussion of the connections between rates and co-ordination see D. Philip Locklin, "Transport Coordination and Rate Policy" (*Harvard Business Review*, summer, 1937, pp. 417-28).

<sup>13</sup>See *Public Aids to Transportation* (Federal Coordinator of Transportation, 4 vols., Washington, D.C., 1940); and *What Is Public Aid to Transportation?* (Association of American Railroads, Washington, D.C., 1940).

because these matters have been more widely discussed than those which have been mentioned, and second, because these problems are confined particularly to one type of carriers—railroads.

There is a dangerous impression abroad that the panacea for the financial problems of the railroads is to put the carriers in receivership and trusteeship "through the wringer." This, like other panaceas, is dangerous and inadequate. The financial conditions of the roads in receivership or trusteeship have not been caused by the same circumstances. In some cases the total outstanding securities are in excess of the structure which can be supported under present conditions. In other cases, the amount of fixed debt appears to be excessive in proportion to the amounts of common and preferred stocks. In still other cases, the decline in freight and passenger traffic has reduced earnings to a point where a capital structure once supported easily has become unsupportable. In any event the same remedies should not be applied indiscriminately. Moreover, if capital structures are reorganized by eliminating or reducing common stocks, preferred stocks, and junior liens, and transferring the equity to senior security owners, it may be manifestly unfair to adopt this remedy at a time when there are indications of a probable material increase in traffic as a result of defence activities.

The problems of consolidation have been avoided because several decades of legislation, discussion, and recommendations have yielded so few important results. Four paths appear available toward this goal: (1) the easy path of waiting for voluntary consolidations to be proposed by the carriers, subject to review and approval by the Interstate Commerce Commission; (2) the difficult path of compulsory consolidation fraught with constitutional difficulties which appear to many to be insuperable although the opinion has been expressed by a distinguished constitutional lawyer that compulsory consolidation is not impossible under the American constitution; (3) the attempted but abandoned path of voluntary consolidation according to a master plan prepared by the Interstate Commerce Commission which it was required to prepare by the Transportation Act, 1920, but modified by subsequent legislation; and (4) the untried path of "induced consolidation," if a term may be coined, by which carriers might be persuaded to consolidate into a smaller number of larger systems in consideration of advantages acceptable to the carriers.

*Importance of the Problems of Transport.* Two aspects of industry have become of paramount importance in this grave hour of world crisis—production and transportation.<sup>14</sup> Those of us who have chosen the field of transportation and allied fields for our life-work owe it to the distinguished men who in the past and up to now have laboured with these problems, such as the man whom we honour today, and who have done such effective work up to this time to carry on their uncompleted work.

<sup>14</sup>Clyde B. Aitchison, "War Time Control of American Railways" (*Virginia Law Review*, vol. XXVI, 1940, p. 847).

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## TRANSPORTATION AND CANADIAN AGRICULTURE

W. M. DRUMMOND

THIS article is concerned primarily with the cost of transporting Canadian farm products. In the marketing of these products the cost of transportation makes up a very large part of the total marketing costs although the proportion varies greatly depending upon the nature of the product and the distance that it has to be carried to market. In what follows an attempt is made to explain this situation in general terms and to consider the possibilities of securing transportation cost reductions by making certain types of adjustment. In addition, consideration is given to more significant changes in transportational technique and the conditions resulting therefrom. It is assumed that reductions in transportation costs would be in the general interest of agriculture and the nation as a whole, but the question as to what groups would receive the benefit or bear the burden of any such reductions, while important, is not considered.

There is a close connection between high cost of transportation and the special structural pattern of Canada's agriculture. Generally speaking, our agriculture is of the extensive type. It is extensive in the sense that the seven hundred and thirty thousand farms are scattered widely throughout the nine provinces and also in the sense that the area of land in farms, while small in proportion to the entire land area of the country, is large in proportion to the amount of labour and the various kinds of capital combined with it. The general practice thus far has been to secure a large amount of product per unit of labour and capital rather than per unit of land.<sup>1</sup> When the entire area of the country is divided by the sum total of agricultural production, the amount of production represented by each acre or square mile is very small. The volume of agricultural goods carried is small in proportion to the distance that has to be travelled in taking it to market. This means high collection costs.

<sup>1</sup>See J. E. Lattimer, "Production per Man" (*Scientific Agriculture*, Oct., 1929).

The results become more apparent if one compares the Canadian situation with that in other countries with which Canada has been forced to compete on world markets. While the dairy cow population of New Zealand is not so much smaller than that of Canada, the total area devoted to dairying is only four million acres, an area but slightly larger than the ten eastern counties of the Province of Ontario. As a result, the cost of collecting and transporting New Zealand's milk and cream to manufacturing plants is extremely low. Low costs of transporting the raw material means that the manufacturing of cheese and butter can be conducted on a large scale and therefore a low cost per unit basis. In Canada we have about five and a half cheese factories and creameries for every one in New Zealand. In pre-war years the small country of Denmark had upwards of two million cows, a total milk production almost three-quarters that of Canada, and as many as five and a half million hogs.<sup>2</sup> Because of the density of production it was economically feasible and the usual practice to transport the milk to the creameries before separating the cream. For the same reason wagon delivery of hogs to the packing plants by the farmers was not only practicable but quite the rule.

A second factor making for high cost of transporting Canada's agricultural products is the long distance between the point of production and the point of consumption. In contrast to agricultural production which has tended to spread throughout all nine provinces, industrial production has tended to concentrate in the central provinces of Ontario and Quebec to a pronounced degree. As a result, a large part of the country's population, and therefore of the domestic market for agricultural products, has been located within a relatively limited area and far removed from many points of agricultural production. While certain agricultural enterprises are regionalized to a considerable extent and while some degree of industrial development has taken place in most sections of the country, the general situation is that a decentralized agriculture has had to cater to a centralized domestic market. In addition to the long distance separating producers and consumers within Canada, a very large percentage of agricultural products has been transported to foreign countries. In recent years we have exported about 70 per cent of our wheat, 50 per cent of our apples, two-thirds

<sup>2</sup>For a detailed description of the structure of Denmark's agriculture see Einar Jensen, *Danish Agriculture, its Economic Development* (Copenhagen, 1937).

of our cheese, from a quarter to a half of our hog products, a sizable part of our beef, and smaller fractions of a long list of other agricultural commodities. To a very considerable degree, Canada's agriculture has been developed and designed for the express purpose of catering to the export markets. In this respect it differs from the highly protected secondary industries which aimed primarily at selling in the domestic market. Whether one is thinking of the domestic or the foreign market or of the transportation of farm products or manufactured goods used in farm production, the average hauling distance is a long one.

A further cause of the high cost of transporting farm products is the pronounced seasonality of agricultural production and marketing. The transportation agencies receive a very irregular volume of business which means irregular use and therefore less than full use of the transportation facilities. Facilities which must be sufficient to handle the business available in peak seasons are either not used at all or used less frequently during other seasons. Seasonal marketing requires the maintenance of a larger amount of transportation equipment than would be necessary if the transportation job were spread evenly over the entire year. While facilities used to transport agricultural products in certain seasons may be used to carry other goods in other seasons, the possibilities of dovetailing traffic are definitely limited. Non-agricultural business tends to be relatively non-seasonal in character and therefore unsuited for dovetailing. More important, it may not exist in sufficient amount. In addition, a considerable part of the transportation equipment is constructed specifically for handling agricultural commodities and is unsuited for any other use. Livestock or refrigerator cars and trucks, for example, have few, if any, alternative uses.

Another factor contributing to high transportation cost is the perishable character of many farm products. While fruits and vegetables, milk, cream, and eggs are the best known perishables, livestock, fresh meats, butter, and cheese are also perishable to a high degree. Such products can be moved long distances only if special care is taken to preserve them while *en route*. For the most part preservation requires careful handling and strict temperature control, and this can be obtained only by the provision of expensive refrigeration equipment. In a country like Canada where the temperature varies from over 100° F. in summer to many degrees

below zero in winter, it is necessary to have rolling stock properly insulated and provided with both cooling and heating equipment. The Canadian Pacific and Canadian National Railways together have over seven thousand refrigerator cars in service.<sup>3</sup> The need for preservation equipment is particularly great in the case of tree fruit crops which are commercially produced in limited regions with the result that distances from producing areas to consuming markets are especially long. With the aid of refrigerator cars, British Columbia cherries may be offered in good condition on the Montreal market 2,600 miles away and British Columbia or Ontario apples can be safely moved in sub-zero weather to consuming points in the Prairie Provinces.

While the main requirement for satisfactory transportation of perishables may be adequate means of controlling temperatures, perishable commodities require more than ordinarily careful handling. In certain cases it is not only necessary to do the handling carefully but to do a great deal of it. This is especially true in respect of livestock which are shipped long distances by rail. Hogs are loaded at the farms, hauled to the shipping station, unloaded for weighing, sometimes loaded again to take to the shipping yard, where various owner's lots are run together until loaded into the stock car. On arrival at the stock yard or packing plant they are unloaded, driven to pens, fed, graded, weighed, and either driven on foot for slaughter or loaded into cars or trucks for delivery at the killing plants. If shipped from Western Canada to an eastern market, the hogs will be unloaded at stockyards and railway feeding yards *en route*, in order that they may not be confined in the cars for more than thirty-six consecutive hours without feed, water, and rest. Handling requires extra labour and extra facilities. Losses resulting from careless handling are enormous. Indeed, even though losses in quality resulting from kicking, prodding, and rough treatment generally are avoided, other losses are caused by the fighting between lots from various owners, by overcrowding and bruising in cars and trucks, by projecting nails in stock cars, by the lack of proper separation of hogs from other stock, by the mixing of stags and sows with the more valuable market grades, and by insufficient protection from extremes of weather. In addition, the loss due to shrinkage in weight during

<sup>3</sup>An up-to-date account of the transportation of Canada's fruit may be found in the special fruit issue of the *C.S.T.A. Review*, March, 1941.

transit is large and increases with the length of haul.<sup>4</sup> Where such losses are avoided through careful handling and the provision of special facilities, extra expense is involved. Where losses are not avoided, hog carcasses are placed in the lower-priced grades and added transportation cost is represented by the price differential between higher and lower grades. Whether borne directly in the form of specific transportation charges or indirectly in the form of lower returns from livestock sold, the cost of transportation is extremely large.

Still another reason for the high cost of transporting farm products is the fact that some of them are quite bulky in proportion to exchange value. It is commonly stated that this or that product cannot stand long-distance transportation. The cost of transporting the article is such a large percentage of its selling price that it does not pay to transport it. A commodity which has small bulk and high value per pound, per ton, or per bushel can be transported long distances whereas a commodity with large bulk and low value cannot be carried very far. Canadian farm products which are bulky in proportion to their value include hay and straw, wool, the various feed grains, potatoes, and turnips. When some of these feed crops are marketed through livestock and livestock products, the situation is greatly improved but live animals are bulkier, relative to their value, than processed meats, and feed marketed in the form of whole milk is still 85 per cent water. The significance of bulkiness as a factor affecting transportation cost has been very apparent in the movement of feed grains from Western Canada to the Eastern Provinces and particularly the Maritimes, of hay and straw from Ontario and Quebec to the Maritimes and New England and from Eastern and various parts of the Western Provinces to the western drought areas, of potatoes from the Maritimes to Ontario, of turnips from central Ontario to United States markets, and of live cattle from any part of Canada to Great Britain.

The relationship between the seasonal character of production and marketing, and the perishable and bulky nature of agricultural commodities, and transportation cost may be considered from three standpoints. In the first place, the absolute cost of transporting our agricultural commodities is high. In the second place, to the

<sup>4</sup>J. M. McCallum, "Transportation of Hogs to Market" (*C.S.T.A. Review*, May, 1936).

extent that agricultural products are more characterized by seasonality, perishability, and bulkiness than non-agricultural goods, agricultural products will be subject to higher transportation costs. In the third place, it seems probable that, on balance, Canadian farm products have been more affected by these problems than farm products in some other countries. It is well known that seasonal production and marketing of dairy products has been much less pronounced in New Zealand, Denmark, and even Great Britain than in Canada. Livestock marketing has been far more regular in Denmark, Holland, Lithuania, and Sweden than in Canada. The degree of seasonality of production and therefore of marketing depends considerably on climatic conditions, and in a country like Canada which has a long cold winter and which is subject to extreme variations in temperature and rainfall it is certain to be pronounced. As for the characteristic of bulkiness, it can probably be argued that it applies more in a relatively new country like Canada than where agricultural development is more mature. In older countries the tendency to market products in the raw staple form is least evident and the practice of mixed farming most general and complete. Where mixed farming is thoroughly entrenched, most of the products go to market in the form of livestock and livestock products. A process of condensation partly reduces the bulky nature of the products before they leave the farm.

Still a further explanation of the high cost of transporting agricultural products is found in the variation in behaviour of transportation charges and agricultural prices. In our entire economy there is probably no better example of price rigidity or fixity than the transportation rate structures. While the long term trend of transportation rates may be downward, changes are made only at long intervals and the downward movements tend to lag badly behind declines in the general price level. Frequent rate changes would result in uncertainty and confusion to shippers and would involve tremendous rate-making expense. Changes are relatively few and far between. On the other hand, farm product prices provide by far the best example of flexibility in the modern price structure. Farm price changes tend to be sudden, frequent, and sometimes drastic.

The serious effect of these differences on agricultural transportation cost is experienced during depression periods such as that

after 1929. Despite terrific drops in farm prices transportation rates tend to remain unchanged. The cost of transport makes up a far larger part of the price received for the product as the depression proceeds. While in recovery periods the opposite would hold true, recent experience indicates that full recovery may be indefinitely or fairly permanently delayed. When farm prices reached their lowest point during the early 1930's, cases were frequent where transportation charges ate up all or nearly all of the price received. In fact there were instances where the price received was insufficient to cover the transportation charges. During depression periods the transportation cost burden is greater than at other times. Those farmers who are farthest from markets and therefore most dependent upon transportation service are particularly adversely affected. The problem of reducing farm transportation costs is directly connected with the larger and more general problem of preventing the occurrence of depressions.

In the list of factors affecting transportation costs one should probably include overlapping and wastefully competitive trucking routes which exist partly because the building of the truck and highway has made it technically possible and partly because the advantage of extra volume of business to firms using the transported material and operating at less than capacity outweighs the disadvantage of high transportation cost. The existence of this high cost is particularly evident in the transportation of whole milk from the farms to urban markets and of cream from farms to creameries. It is present also where livestock is trucked to market and no doubt exists to some extent wherever the trucking method is employed. A recent study of the cost of transporting whole milk to the Toronto market shows that in 1938, 178 trucks were used to haul the milk from 3,127 farms. Had the whole business been operated with the same degree of efficiency as that attained by the most efficient 25 per cent of the operators, 33 of the trucks and truckers could have been eliminated along with a theoretical saving of 3,324 miles per day or 22 per cent of the total mileage.<sup>5</sup> Another study of cream transportation in Ontario states that it is common to find four or five trucks collecting along

<sup>5</sup>"Study of Transportation of Milk to the Toronto Market in 1938" (undertaken jointly by Ontario Milk Control Board and Department of Agricultural Economics, Ontario Agricultural College, Guelph; available shortly in published form from Ontario Milk Control Board).

the same road. In one township no less than eleven creameries were collecting cream in the spring of 1938. It was estimated that there was a duplicate or waste mileage of 218 miles every time the cream of the township was collected. On the basis of 80 collections per creamery per year there was an estimated waste of 17,500 miles per year due to overlapping in collection. Assuming 10 cents per mile as the cost of operating trucks, the annual cost of duplication in this township alone amounted to \$1,750.<sup>6</sup> Wherever overlapping in collection takes place there is a combination of extra mileage travelled and less than full loads obtained which can only mean excessive transportation costs.

*Transportation and Agricultural Adjustment.* After considering factors responsible for high cost of transportation one is led to enquire regarding possible means of effecting reductions. Any move calculated to achieve this end must attempt to shorten the distance over which goods must be carried; to put the goods in such a form that the cost of transporting them will be as small as possible in proportion to their selling price; or to make changes in agricultural production and marketing and in transporting arrangements such that fuller use can be made of transportation facilities. Most of these types of adjustment have been partially applied.

In shortening the distance that goods have to be carried, it is necessary to explore the possibility of replacing indirect routes by more direct ones. One would require an accurate knowledge of all existing and alternative routes as well as much other relative information. The controversy that has attended the building of the Hudson's Bay Railway or the proposal to build a short route to connect the Peace River area with the main Canadian National line to the Pacific and avoid the round-about trip via Edmonton illustrates the technical and complicated character of the problem. However, there may still be cases where it is both desirable and feasible to shorten hauls in this way.

There may be instances where the length of haul can be reduced without in any way changing the route travelled as in the case of eliminating overlapping of truck transportation. While the elimination of overlapping might involve elimination of, or serious

<sup>6</sup>A. Stewart, *Economic Factors in Cream Collection in Ontario* (published in mimeographed form, 1938, by Department of Agricultural Economics, Ontario Agricultural College, Guelph).

interference with, existing interests, that improvements have been effected in some areas shows that the difficulties are by no means insuperable.<sup>7</sup> The steps required might include the more or less arbitrary replacement of many small competing creameries or other plants by fewer and larger ones. Or farmer producers, through co-operative action, might take over and thoroughly systematize the trucking business. There might be a possibility of reducing the number of trucks and truckers by a more strict licensing system. A system of zoning might be set up by existing truckers. Again the trucking of a certain commodity might be declared a natural monopoly undertaking and a single trucking contract awarded by tender. The methods used would be determined by special conditions in the area concerned. Whatever the political and legal prospects, the purely technical opportunities for reducing mileage and therefore cost are very great. It is generally agreed that the extent of duplication is enormous. In a country like Canada where market hauls are bound to be long in any event, it would seem particularly necessary not to have them made still longer by wasteful overlapping.

It is possible that the distance factor could be made less serious if more attention were paid to the idea of bringing the market nearer to the point of production. The development of roadside markets has made considerable headway in some parts of Canada but it may be that the scope is fairly limited. The relative newness of roadside markets and their close connection with the building of highways, the use of cars, and the growth of the tourist traffic, suggest that more might be operated to advantage. They can benefit only certain types of farmers and certain areas.

Another and somewhat similar plan is that of developing or reviving local farmers' markets. The use of such markets may have lagged behind the improvement of rural highways and the use by farmers of trucks and automobiles. For the most part the growth of such markets must depend upon, and correspond with, the degree of industrial decentralization. Should industry become increasingly decentralized, the average distance from market will be shortened significantly.

<sup>7</sup>A notable example is the rerouting programme effected in connection with the transportation of milk to the Dayton, Ohio, market. For an excellent discussion of methods followed and kind and degree of savings secured, see R. W. Bartlett in *Journal of Farm Economics*, May, 1936.

In attempting to reduce transportation expense by paying special attention to the form in which goods are shipped the opportunities of reducing bulkiness and weight are marked. A tremendous reduction takes place in volume and weight when feed crops are marketed in the form of livestock and livestock products. It has been calculated that fluid milk is only half as heavy as the feed required to produce it; that condensed milk is only one-fifth, cream, cheese, or evaporated milk one-twentieth, and butter one-fortieth as heavy. When weight is considered as a fraction of that of the feed from which they originate, eggs are one-fifth, poultry about a seventh, pork one-eighth, mutton one-fifteenth, and beef from one-thirtieth to one-fortieth. The bulk and weight reduction process often results, however, in shifting from less to more perishable products and lowers the transportational advantage. Although cream is much less bulky than milk, it is too perishable to be produced any great distance from market. Cheese and evaporated milk, while as bulky as cream, are far less perishable and tend to be produced much farther from market.

Livestock is less bulky than fodder crops, processed animals are less bulky than live ones, and some processed livestock products are less bulky than others. The bulk-reduction process involves the development of mixed farming and various types of processing plants. There are limitations to these developments. Climatic and water supply conditions must be satisfactory before mixed farming and livestock production are possible. Products, such as potatoes, are not yet desired in a processed form and must be shipped regardless of their bulk. Such limiting factors, however, while very important, are not to be taken as general.

Much has been done to make products less bulky before shipping them. Much has been done to arrange farm production programmes so that products which must be shipped in bulky form are produced reasonably close to market. Further consideration should be given to both these types of adjustment. Under a properly planned system whole milk would be transported from every farm within a narrow radius of a large market centre and not, as at present, from farms scattered over a much greater area. It should be possible to arrange that milk now being transported long distances only to be sold at surplus or butterfat prices could be separated at the farm and the cream made into butter at near-by creameries. If this were done, the skim milk would be available for feeding

on the farm and the cost of transporting it completely avoided. Most of what has been written regarding the importance and possibilities of eliminating bulkiness applies in greater or less degree to the removal of perishability.

Special mention should be made of the need for making sure that all products shipped are of high quality. Transportation cost is based on the quantity rather than the quality of a product. And since higher quality goods bring higher prices, it follows that they are better able to stand transportation. That this is being increasingly understood by farmers, is shown by the marked progress in quality improvement where long distance shipment is necessary. Perhaps the most outstanding Canadian examples of such improvement are found in the case of Maritime potatoes shipped to Quebec and Ontario, and British Columbia apples shipped to various eastern Canadian points as well as to Great Britain and foreign countries. Quality improvement tends to be most pronounced where perishable or bulky products have to be transported over long distances. On the other hand, too many farmers seem to have the idea that they can afford to disregard quality improvement where shipping distances are relatively short. It is not at all uncommon to find products of distinctly inferior quality being transported several hundreds of miles. In the live-stock arriving at central stockyards there is still a wide variation in the quality that is shipped by rail.

More efficient use of transportation facilities will follow more intensive farming and a greater volume of business per mile. Our agricultural land has heretofore been sufficiently low priced and high yielding to result in low unit cost of production when used extensively. It may also be true that the advantage of low unit cost resulting from the use of extensive methods has tended to outweigh the disadvantage of high transportation cost which extensive farming entails. Nevertheless all Canadian farm management studies made in recent years indicate that the farmer who uses the more intensive methods is producing at the lowest per unit cost and is obtaining the largest net income. Since he does this by turning out more units of product per unit of area, it follows that more intensive farming, while it would tend to bring about reductions in the per unit cost of transportation, would also tend to cause reductions in the selling price of farm products. This assumes, of course, the continued operation of all existing

farms. It would appear that a wholesale application of more intensive farming must be predicated upon the expectation of a more effective market demand or the concentration of production in more limited areas.

Most other plans for the better use of transportation facilities are based on the assumption that their adoption would make it possible to reduce the amount of transportation facilities in use. One such plan is greater regularization of production and marketing. Special emphasis has recently been placed on the necessity of greater seasonal regularity in the production and marketing of hogs. Seasonality in hog production is much more marked in some sections of the country than in others. Production in central Ontario is far less seasonal than in eastern Ontario and production in Ontario and Quebec much less seasonal than in the Prairie Provinces. Moreover, there appears to be much greater regularity where hog production is a major farm enterprise than where only a few hogs are kept. These variations in seasonality, the need for greater regularization on grounds other than cheapness of transportation, and the progress being made in providing artificial heat to protect pigs born in zero weather, all give promise that much greater regularity of marketing can and will be obtained. In recent years there has been much discussion of, and some actual attempts at, feeding the market and increasing the length of period during which products would be marketed and consumed. The possibility of lengthening this period in the case of perishable fruits and vegetables by the general adoption of quick freezing methods has been receiving consideration.

A second way of making efficient use of facilities is to see that all the space on railway cars and boats being paid for is actually occupied. Few items contribute more to high transportation cost than the paying of freight on livestock or other products at the full carload rate when the car is only half full. Much the same can be said regarding the need for having trucks filled to capacity.

*Some Effects on Agriculture of Changing Transportation Technique.* It is not possible in the space available to discuss the various technological developments in the realm of transportation and the extent to which they have contributed to lower transportation costs. Neither is it possible to enter into the complicated but important subject of transportation rates and rate-making. It seems desirable, however, to mention important technological

developments to illustrate their widespread implications. Refrigeration has made possible long-distance movement of perishable products, increased greatly the interregional and international competition for markets, paved the way to decentralization of the packing and other industries, and, by cheapening transportation, permitted radical changes in the types of farm production. The development of highways and trucks has enabled many farmers to ship livestock direct to packing plants and thereby avoid the various stockyard charges and considerable loss due to weight shrinkage, shifted much traffic away from the railways, and changed the shape of milksheds, the location of whole milk producers, and removed the former monopoly advantage held by farmers living adjacent to railways. On the other hand, it has given rise to the direct marketing controversy regarding livestock and permitted the development of duplication with all its attendant wastes. It has also reduced the demand for horses together with the feed crops needed to raise and maintain them.

Two general relationships between agriculture and transportation seem important. Experience gained in the depression years following 1929 shows that transportation agencies can apparently count on agricultural business declining less than other types of business during depression periods. Between 1929 and 1933 total railway freight in Canada fell from 115 million tons to 57 million tons but agricultural railway freight fell from 25 to only 18½ million tons despite the great drop in grain production in the West due to drought. During the same period manufacturing freight fell from 32 to 14 million tons, forest products freight from 15 to 6 million tons, and mineral products freight from 42 to 18 million tons. The prime reason for the relatively small reduction in agricultural business is that farmers tend to maintain or even expand production when subjected to depression prices whereas other classes of producers undertake immediate and wholesale contraction of output.

As the development of this country proceeds, we may expect agricultural freight to make up an ever smaller percentage of the total freight tonnage partly because further agricultural expansion will be less rapid than that of other industries and partly because, as agriculture develops, more of its products will be shipped in the processed and therefore least bulky and weighty form.



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## SOME PROBLEMS OF URBAN TRANSPORTATION

NORMAN D. WILSON

THE transit problem in any community is a local problem. Local conditions, physical and non-physical, demand a unique solution in each instance. Nevertheless, there are general principles and trends that give a direction to the solution, and it is these principles and trends that I hope to bring to your attention.

*The Beginning of Urban Transit.* Twenty-five years ago urban transit had much more the status of an exact science than today. It was one hundred per cent electric railway operation, and after thirty years of nothing else its economic theory was well established. Today hardly more than a third of the rides taken in an urban area in this part of the world are made by common carrier. This fact is the keynote of any present discussion on urban and suburban transport. With this qualification I define transit as the common carrier passenger service in urban and suburban communities. Suburban transit is differentiated from urban transit in that its operation to be effective requires the publication of time-tables.

Limited by some element of fatigue, the maximum distance that an urban dweller has ever been content to dwell from the place of his daily employment is the distance that can be travelled in one hour. In fact, forty-five minutes' travel is more usually the governing range. The extent, density of population, and social being of a city are a function of its means of transportation for the populace at large. Before the days of public transportation this consideration resulted in a very densely populated city nucleus, and since space was at a premium the streets were for the most part narrow, and frequently tortuous, since vehicles were very few. There is record of a bus service started in Paris in 1662, but since it was limited by decree to persons of quality its life was brief.

An omnibus concession was granted in Paris in 1828, while the first omnibus route in London was started in 1829. In New York the first omnibus line was started in 1830, and in the following year a street-car line was introduced but was a failure, and was not again tried until 1845. In 1852 several additional horse-car

lines were inaugurated in New York, while in 1854 the first street-car appeared in Paris under the name *Chemin de Fer Américain*. In the decade following almost every city of any size inaugurated animal traction lines.

The horse-car extended the radius of one hour's travel from two and a half or three miles to four or even five miles. Suburban villages, previously in every sense distinct communities, became merged in the greater city. A less dense, more open development of cities occurred, and since fully twice, if not four times, the area formerly available for building within the sixty-minute zone was now available, streets of more generous width were generally laid out in the newer areas opened up. In turn, the narrower central streets had imposed upon them a burden they were never intended to bear, viz. tracks and railway operation.

Once street traffic on rails was introduced there were many attempts to improve the means of traction and to increase its speed and carrying capacity. The first electric traction system to be inaugurated was in Richmond, Virginia, in 1888. Others followed in quick succession. Canada was well in the foreground. An experimental railway was in operation at Toronto Exhibition for several years after 1885, and a seven-mile stretch with double trolley system was opened at St. Catharines in 1887. The first of the present systems was Vancouver, which commenced operations in June, 1890, followed by Ottawa in the following year, and Hamilton, Montreal, and Toronto in quick succession.

With the introduction of electric traction the periphery of sixty minutes' travel time was again extended. No longer was the artisan compelled to live in the immediate vicinity of his work or the merchant to live above his store. In turn, a store, theatre, or market, instead of being confined to serving the population of a limited zone, was able to draw its customers from the whole municipality. Once the economic use of property was wholly dependent upon public transportation, that service quickly changed from a luxury to the first essential of city life—the fundamental service upon which the very being of the remade city existed. It will readily be seen that the urban development engendered by a street-car system tended to be star-shaped or ribbon-shaped, with residential development of continuously decreasing width following the various traction lines. This inherent tendency left traction

lines very vulnerable to competition when the motor vehicle appeared.

*Results of Competitive Development of Tram Lines.* In the early history of urban transit an individual or company obtained a concession for an animal traction line along a certain street, or from the centre of the city to some suburb. There was less thought of providing a necessary public service than there was expectation that such would be a profitable business venture. The track structure was of very light type, costs of construction were cheap, costs of operation were low, while permissible fares (compared to average wage-rate) were high, equivalent to at least twenty minutes of said wage. Laid along main travelled arteries only, early profits were substantial in relation to investment.

The result is easy to anticipate. Would-be concessionaires bid against each other for tramway privileges, and the franchise rights when obtained were valuable property. Long-term, even perpetual, franchises were sought and granted, and in payment very onerous and sometimes curious conditions were demanded by the municipality such as: maintenance of roadways; obligations to pave the track allowance if not the whole street; construction and/or maintenance of bridges; maintenance of sewers; street cleaning; snow removal; maintaining watchmen at railway crossings or blind intersections; transporting mails; carrying civic and government officials and employees free; transporting freight for the authorities at 50 or 75 per cent discount on tariffs; lump sum cash payments for the concession; payments of a proportion of gross receipts; requirements to carry passengers at reduced fares without relation to cost during certain hours or in trailers; providing second-class cars at reduced rates; requirements to run baggage or parcel cars, or special services to district markets. There was no limit to the demands made on the would-be operators of street-cars, and none they refused. Fixed fares, without provision for alteration during the entire period of the concession, were the universal practice. Monopoly, if considered at all, was limited to the streets traversed and to rail transportation only.

Pittsburg is a good example of the extent to which franchise grabbing went in the United States. There were 114 underlying companies in the Pittsburg railway system with its 600 miles of track as it stood in 1925. Competition was bitter, going to almost incredible lengths. Lines were laid out and fares set for the

deliberate purpose of robbing a rival company of its traffic, and regardless of the effect on a company's own revenue. Such warfare almost always ended in amalgamation, but the scars remained. Though three companies in Rio de Janeiro have been unified and electrified since 1910, as the price of the city's consent to that amalgamation three separate and competitive first-class services are still given from the same downtown terminal to the same district, in large part over the same tracks, one at 200 reis fare; one at 200 reis fare normal and 100 reis at rush hours, and one at 100 reis at all times.

Almost coincident with the recognized need for consolidation came the introduction of electric traction. In almost every instance these changes necessitated the negotiation of revised concessions, and in almost every instance existing arrangements that appeared to be to the benefit of the municipality were continued unchanged. However, it was still true that the scale of fares agreed to was substantial in comparison with current rates of wages, while the centrifugal urge to be given city growth by fast transport, with the corresponding increase in length of haul, was not immediately perceived.

After forty or fifty years' experience of the changes induced by fast local transport, years also of drastic changes in general economic conditions, the position of the public transportation service in relation to civic life has completely altered. The luxury has become the necessity. None the less many of the old obligations are still enforced against the street-cars, and still the idea lingers that fares of a half-century ago should still be adequate. Admittedly it was a necessity for the Ottawa Railway to be able to clear their tracks of snow, but the long continued obligation to clear all car-track streets from curb to curb was an unfair burden when motor traffic jointly benefited and paid no part of the cost.

It is one of the anomalies of human nature, one of the inexplicable factors of "rubber-mindedness," that from the moment motor vehicle public transport came into being, it was free from the traditional obligations of the street railway. It was the beginning of a new age. It started with a clean slate. With very odd exceptions a completely new schedule of fares was allowed, and no special obligation for street-paving, snow removal, or watchmen services, was directly charged against the new system.

*Increasing Use of Automobiles.* To the beginning of the Great

War, the motor car had affected transport in general and transit lines in particular hardly at all. Paved streets were limited even in the larger cities. In the smaller towns and in the rural areas none existed. The first paved rural road in Canada, the Toronto and Hamilton Highway, was completed in 1914. The United States was relatively little further advanced at that date.

In 1910, after fifteen years of motor vehicle registrations, there were 458,500 passenger vehicles registered in the United States and 8,967 in Canada. By 1914 these figures had increased to 1,625,739 and 69,598 respectively, and by 1920 to 8,225,859 and 408,790. In 1930 there were 23,059,262 cars registered in the United States and 1,055,514 in Canada, and in 1939, 26,201,395 and 1,190,021 respectively, or close to one car for every four persons in the United States and one car for every eight persons in Canada.

*Effects of War on Costs of Labour and Materials.* By the end of 1915 a boom was on in the United States, and the cultural period in which the electric car had thriven commenced rapidly to change. Some might say that thrift lost its place among the virtues. Prices of materials began to skyrocket, and wages rose in sympathy, if not proportionately. By the middle of 1917, tramway material prices were 90 per cent above what they had been in 1913; construction costs 80 per cent; and tramway wages 20 per cent. Tramway fares alone stayed fixed. It was the middle of 1918 before the five-cent fare complex could be broken and the index showed a tendency to rise in both the United States and Canada.

With a slight decline in prices at the immediate conclusion of the War, all costs commenced another skyrocket ascent in the post-War boom, and fell but slightly in the post-War depression. At the beginning of 1922 in the depth of this depression, United States tramway wages stood at 210 compared to 100 in 1913; construction costs at 175; street-railway operating materials at 142; and street-railway fares at 146. Passengers seeking transportation were at an all-time high. The earnings of the transit companies provided little ability, let alone incentive, to supply the service necessary.

*The Jitney—A Product of Circumstances.* With industrial conditions at peak during the War and post-War years, the demand for increased transit services was insistent, both as regards added capacity and new extensions. Many new industries were estab-

lished, some in outlandish places with respect to existing transportation. In the circumstances the tramways were too poor to provide all the extensions of service required, while industrial workers were affluent. Many bought motor cars in which they drove themselves and their mates and neighbours to and from work, and in so doing were undisguised blessings to the street railways.

In the first post-War slump, however, these car-owners took to the road in direct competition with the street-cars. No attempt was made to develop new transit territory; little consideration was given to the cost of operating their vehicles. The jitney operator had a car of sorts and no job. He needed cash to live and every twenty passengers carried meant a dollar in cash, or whatever amount was left after buying gasoline. That buses of sorts were soon substituted was incidental.

Once a glimpse was had of this supposedly easy way to make a living, the jitney craze swept across the United States and Canada, as it did after the normal lag in time across Mexico and South America. It has been my good or bad fortune to have three times seen this epidemic of irresponsible motor vehicle competition run its complete unchanging cycle in three different cultures with the identical result: the complete or near breakdown of organized transit, with complete disbelief by the authorities that this result was inevitable until it had occurred.

Particularly susceptible to irresponsible competition are transit operations based upon a universal fare where the cost of transporting the long-haul rider is compensated for by the cost of transporting the short-haul rider. Owner-operators always commenced with small vehicles. Due to their limited capacity only short-haul riders are profitable and they alone are carried while the unprofitable business is left to the transit company. Should it attempt to raise fares to compensate for lost revenues, always riders are lost and more competing vehicles appear.

Transportation differs from other public utility services in having no individual contracts with customers. Service must be supplied day by day leaving it optional with the public to make use of it or not. If obligation devolves on one agency to lift all the traffic offering, that agency can apportion its service to the traffic which experience shows is to be expected. But if there are competitive agencies, both excess and deficiency of service are certain as each competitor attempts to obtain all the lucrative

business and leave all the non-lucrative to his competitor. The public suffers in the end.

The words of the Paris Prefect of Police in 1854 come from a logical French mind: "In a great city such as Paris, there is immense need of low priced transport. Between all quarters of the city there is close community of interests of every kind. The regime of competition . . . does not satisfy the need, as it will serve certain quarters and not others. So that the best thing to do is to create a single company that with the least general expense will produce the cheapest transport."<sup>1</sup>

The jitney outburst marked the end of the electric railway era. Until then the profit motive had persisted as the driving force of urban transit. What followed was a new day and a new deal: the era of co-ordination, of service at cost; a recognition that proper transit service is a vital necessity of life in a large community, and that it cannot be obtained for any extended period from any private party at less than cost, irrespective of any contracts to the contrary.

*Loss of Traffic to Private Automobiles.* But while the jitney menace was a visible leech on the revenues of the street-cars, it was only symbolic. All the time the ownership of motor cars was increasing by leaps and bounds, and while the rate of increase has materially slackened since 1930, the end is not yet.

Consider the effect on common carrier transit of many privately owned cars. On the very moderate assumption that the operation of each automobile in the Toronto area deprives the transit service of three fares daily, the result is a reduction of 140 million fares per year in transit receipts. My own opinion is, that this is only half the actual amount; that on the most conservative basis the operation of each of the 130,000 automobiles in Toronto represents at minimum 2,000 rides per year lost to the common carrier—rides that would of necessity have been made by common carrier if a motor car had not been available, and aside altogether from the purely pleasure or casual riding induced by the ownership of a car. It means that the public transit service is used for less than 40 per cent of the rides necessarily made throughout the Toronto area.

A survey lately conducted by the United States Bureau of

<sup>1</sup>Henri Rublmann, *Les Chemins de fer urbains* (Paris, 1936).

Public Roads<sup>2</sup> determined that each motor car in cities of a population of 100,000 or over ran an average of 9,490 miles per year of which 5,740 miles were over city streets. At the very high average length of urban trip of three miles, this represents 1,913 trips per year, or allowing the almost universal average figure of 1.7 persons per automobile, 3,250 intra-city passenger trips per year. Even if 40 per cent of these rides would not have been taken if the motor car had not been at the door, 1,950 fares were lost to the transit company. (Preliminary studies by the United States Public Roads Administration indicate that 50.9 per cent of all automobile use in urban places is for business purposes, the balance being for recreational and social purposes.)<sup>3</sup>

Hamilton, Ontario, remained practically static in industrial and building development during the years of the depression and the following comparison is interesting:<sup>4</sup>

	1930	1938
Population.....	149,000	155,547
Number of industrial establishments ...	439	471
Employees.....	31,053	31,313
Wages and salaries.....	\$39,661,672	\$38,297,830
Average wage.....	\$1,277	\$1,223
Gross value of production.....	\$166,910,535	\$150,394,205
Automobiles registered.....	20,562	24,504
Transit fares.....	23,386,466	15,734,055

If the increase in automobiles is entirely responsible for the decrease in transit riding, each motor car is responsible for the loss of 2,035 transit fares annually. On this basis the gross riding habit in 1930 would be 411, and in 1938, 422. It is safe to say that whereas in 1930 as many as 36 per cent of necessary rides in Hamilton had been made by common carrier, in 1938 the ratio had dwindled to 24 per cent.

That the T.T.C. is used for less than 40 per cent of the rides necessarily made in the Toronto area, and the Hamilton transit services for but 24 per cent of similar rides in Hamilton, is not an aspersion on the transit service, but an illustration of a fact prevalent throughout the United States and Canada. The smaller the city, the smaller the proportion of necessary rides made by common carrier. It is in the small places, with distances short and traffic limited to begin with, that abandonment of common carrier service has been most pronounced. That only a minor proportion of the

<sup>2</sup>*Transit Journal*, Jan., 1940.

<sup>3</sup>*Automobile Facts and Figures*, 1940.

<sup>4</sup>Dominion Bureau of Statistics: Ontario Department of Highways.

necessary rides are now made by common carrier, compared to almost 100 per cent thirty years ago, is a basic consideration in the modern problem of urban transportation. Political thought has not as yet fully realized the implication, which is ultimate subvention of urban transit.

*Increased Costs Due to Motor Car.* Loss of traffic has not been the only way in which urban railway systems have been affected by motor vehicle competition.

The motor vehicle has demanded better standards of paving, not only on the downtown streets but throughout the city. Very much heavier and more expensive types of track construction have been adopted to postpone as long as possible disturbing those pavements for track repairs or replacements. While on an accounting basis the extra cost spread over a longer life may show a pronounced annual saving, the fact remains that obsolescence is not a factor in the calculations. Tramway history during the past fifteen years offers no inducement to tie up further capital for an extended term ahead.

Yet the extent to which new capital has been required, due in part to increased costs of labour and material since pre-War days, and in part to the higher standards of track construction demanded in a motor age, is shown in the returns of the Montreal Tramways Commission. The appraised value of the physical plant of the Montreal Tramways Company as of December 31, 1917, on the basis of 1914 costs was \$36,286,295. As of December 31, 1920, additions had increased it to \$37,858,700. Largely through replacements costing more than the original items, its plant account stood at \$54,105,862 as of December 31, 1939. The Company transported 191,941,835 passengers in the year ending June, 1920, and 208,928,429 in 1939, of which very nearly one-sixth were carried by bus or trolley-bus. In 1920 each fare had to support an investment of 19.5 cents; in 1939, 25.9 cents (33 per cent more).

The Ottawa Street Railway is substantially the same system it was in 1925. Growth during the period was as follows:

	Total investment (road and equipment)	Revenue (passengers)	Miles (track)	Investment, per passenger	Investment, per mile	Vehicles owned
1925....	\$6,109,843	\$34,366,662	56.77	17.8 cents	\$92,933	184 cars,
1930....	6,897,195	28,599,564	58.35	24.1 "	118,200	157 " , 16 buses
1935....	6,876,880	20,928,638	53.48	32.8 "	128,500	118 " , 19 "
1938....	6,932,407	20,781,630	51.74	33.4 "	134,000	118 " , 22 "

*Electric Railway Statistics* (Dominion Bureau of Statistics).

Making allowance for buses owned, the investment per mile of track would approximate \$115,000, \$125,000, and \$130,000 for 1930, 1935, and 1938 respectively, compared to \$93,000 in 1925. Investment per passenger carried increased 88 per cent in thirteen years.

Calgary and Edmonton have a population of approximately 90,000 each, with 12,500 and 11,000 motor cars respectively, and municipally owned street railways. Of the 77 miles of track in the Calgary street-railway system, 34 miles are open ballasted track. Of the 54 miles of track in the Edmonton system as of 1938, 21.4 miles were open track. To relay the 21.4 miles of open track in Edmonton in paved construction would entail an increase in debenture debt of \$1,284,000. On a  $4\frac{1}{2}$  per cent serial basis, this represents \$98,000 per year for twenty years, an additional 0.65 cents on every fare, or the total annual receipts at present fare of 4.87 cents from two million additional passengers, which are not in sight from such improvement. Rather, experience has most definitely shown that added pavement brings added motor ownership and loss of tramway riding.

A lineal foot of double track street railway with incidental special work will cost at minimum \$25.00. For that price a six-lane pavement of the highest class can be constructed. The total cost per seat mile of a street-car or bus (0.8 cents to 0.9 cents per seat mile) is not greatly dissimilar. It can be accepted that pavement will be laid in any event. Then why duplicate the investment for track, particularly when (and this is the vital factor), if street-car service is decided upon, it will be at least twenty years before that decision can be altered in any way without capital loss?

Personally I do not believe that any brand-new street railway will ever be built anywhere—at any rate in this hemisphere, or that any major extensions of any existing street railway will be constructed; further, I believe that replacement of existing lines will grow less and less. Existing street railways will undoubtedly continue to operate for many years, and no doubt many short sections will be constructed as cut-offs in lieu of extended replacements or to improve operating conditions and permit economies of operation, but any additions to existing systems will be reflex and transitory.

*Traffic Congestion.* Automobile competition has also brought traffic congestion from both parked and moving cars. That tre-

mendous savings could be accomplished by the elimination of street parking must be known to all, but little is done, and I am afraid a large measure of traffic congestion must be accepted as a permanent condition. The day was, though wholly unknown to the rising generation, when the electric street-car enjoyed a virtually clear right-of-way on city and suburban streets.

Congestion has necessitated another source of expense, viz., safety devices to permit quick get-away and high running speed. These, eminently proper in themselves, necessitate greatly increased investment. Competition of the motor has also made it necessary to supply a much improved standard of passenger comfort. The cost of an ultra modern car in Canada is \$23,000 (1941) as against \$16,750 in 1921, and \$8,000 in 1914.

*Ride on Rubber.* There has been something in the heart of man, without distinction of climate, culture, race, colour, or class, to which the motor vehicle has made appeal. In some measure it has been his desire for freedom of movement, for the service of his own convenience without being limited by the convenience of the crowd. Stranger still, there has been little resentment by the non-motor-using public against the selfish use of motor cars. The ride-on-rubber psychology may be difficult to explain, but is a fact to be accepted. To what extent it will give way to air-mindedness is for the future to show. Whether the war and the aftermath of war will put the chains of dollars-and-cents economics upon the motor vehicle is also to be learned. In any case the past two decades have seen the perfecting of a new transport medium of enormous utility and one that has not yet been fully integrated into our civilization.

Against an automobile that can carry its owner direct from his house to his destination, the street-car cannot compete in convenience or speed, and the bus only relatively. Instead of the tendency of cities to grow star-shaped, the tendency with motor-vehicle operation is for a more wide-spread and diffused development. The trend is for the decentralization of industry and residence both within and outside the urban zone. This is the type of development for which the street-car is not best fitted.

On the other hand, the automobile brought with it the great problem of street congestion in our present cities—probably the most expensive to solve (or attempt to solve) of all modern civic problems. To what extent the cost of solving that problem should

be a charge against the traffic creating it, has been the cause of much controversy and considerable heat. Until such question has been finally settled by the court of public opinion, relative values in urban transportation cannot be reduced to mathematical formulae.

*Motor-Vehicle Transit.* As late as 1922 the use of motor vehicles by electric traction companies in the United States was virtually nil. In that year some 1,750 million car miles were operated, about 3 per cent less than in 1917. In the next five years, car miles decreased another 3 per cent, reaching 1,700 million in 1927, but during the five years bus miles operated by traction companies had increased to 250 million. Since 1927, car miles have continuously declined, while bus miles have continuously increased, round figures for 1937 being 1,200 million and 950 million respectively.<sup>5</sup> Last year's figures should show these respective vehicle-miles about equal. A large part of the lost car mileage can be traced to the abandonment of suburban services and street railways in the smaller cities.

United States statistics for 1940 show that in cities of a population over 500,000, 51.6 per cent of common carrier passengers travelled by street-car, 28.2 per cent by rapid transit and electrified suburban railway, and 20.2 per cent by free wheel vehicles. In cities between 100,000 and 500,000, 36.7 per cent travelled by street-car and 63.3 per cent by free wheel vehicles (11.4 per cent by trolley-bus). In cities under 100,000 population, 20.3 per cent travelled by street-car and 79.7 per cent by free wheel vehicle (2.9 per cent by trolley-bus).<sup>6</sup> During the five years, 1935-40, surface traffic of the United States transit companies increased by 1,054,589,000 passengers or 9 per cent. Bus passengers increased by 2,406,197,000 or 131 per cent; trolley-bus passengers increased by 478,529,000 or 867 per cent; street-car passengers decreased by 4,494,737,000 or 43 per cent.

In 1920 electric railway traffic in Canada attained an all-time peak to that time when 804,711,333 passengers were carried. In that year 64 electric railways operated 111,043,210 passenger car miles over 2,208 miles of first and second main track. In 1930 the number of railways had been reduced to 51 with 2,080 miles of main track; 136,240,958 car and bus miles were run and 792,701,493

<sup>5</sup>"United States Census of Street Railway, Trolley Bus and Motor Bus Operation" (*Transit Journal*, Jan., 1940).

<sup>6</sup>*Ibid.*, Jan., 1941.

passengers carried, a decrease of 44,028,358 from the all-time peak of 836,729,851 in 1929. Bus miles represented not more than 12 per cent of the total operated, and bus passengers about 5 per cent of the total. In 1939 the number of railways had been reduced to 36 with 1,592 miles of main track; 123,816,258 car and bus miles were operated and 632,533,152 passengers carried. Bus mileage represented 21 per cent of the mileage operated, and bus passengers approximated 11 per cent of the total passengers carried. During 1940 three more transit companies (Brantford, London, and Oshawa) suspended rail passenger operation, and Quebec will shortly do so.

Of the rail systems in operation, three comprise the Toronto group and three the Winnipeg group, leaving actually 32 systems, or 31 if the Fort William-Port Arthur systems are combined. One carries no passenger traffic whatsoever. Bus services only are operated in fourteen cities that formerly had street railways. Nine systems in the nine ranking cities of Montreal, Toronto, Vancouver, Winnipeg, Ottawa, Quebec, Hamilton, Edmonton, and Calgary, carried just under 90 per cent of the passengers reported by all electric railways. These systems carried 561,848,401 passengers in 1939, against 709,486,587 in 1929. They carried in excess of 85 per cent of the bus passengers of all urban systems reporting to the Dominion Bureau of Statistics.

*Vehicles for Urban Transit.* Double-deck auto-buses have been in use in London and New York since prior to the Great War. They were a direct development from the horse-drawn omnibuses which they superseded. As used in New York they have not been directly competitive with the street-cars, and are essentially vehicles in which capacity is a greater consideration than speed.

Until 1927 the typical American bus was the conventional motor vehicle with engine in front. In that year Fageol introduced the revolutionary idea of the street-car or transit type body with entrance door ahead of the front wheel. Strange to say, it was not the motor-bus that first adopted this new type body but the trolley-bus, which appears to have been a Swiss development occasioned by the exigencies of the last war. It found a field in Britain in competition with the double-deck motor-bus and double-deck tramcar, but its use in the United States and Canada, in competition with the rapidly improving gas bus, was disappointing, and it had well-nigh disappeared when the transit type vehicle appeared.

A great improvement in roads in the seven or eight years previous, great improvements in overhead construction developed by the manufacturers in that period, combined with the traffic and mechanical advantages of the new type of body, brought the trolley-bus by 1930 into the front rank of transit vehicles. Following the adoption of the transit type body by the trolley-bus, that type body has become universally standard for all city service free wheel vehicles.

Impelled by the necessity of obtaining a vehicle with more rider appeal, and with faster accelerating and decelerating abilities in traffic, the P.C.C. or Presidents Conference type of car was developed by the street-railway industry and introduced in 1937, after eight years' research and experimentation. In the interval, street-car miles annually operated in the United States had fallen by 40 per cent and street-cars owned in the same ratio, the trend hastened no doubt by the great depression. In Canada cars owned had decreased 15 per cent in the eight years. These new vehicles have rates of acceleration and deceleration in excess of the motor vehicle, and wherever operated have shown increased riding over the type of car they superseded, but their cost is about 50 per cent more than the cost of the cars they have replaced, and their cost of operation greater than former types of one-man cars. Their use is almost wholly confined to cities in excess of 500,000 population.

It would seem that transit vehicles are now fairly well established as to type. At present effort is being expended to improve the power plant, and the power application on motor-buses, to permit the use of cheaper fuels, to make riding smoother for passengers and less effort for the driver, and to reduce costs of maintenance and the time necessary for vehicles to spend in shop or garage. Buses and trolley-buses of equal capacity to the P.C.C. car are already available, with all the advantage of manoeuvrability of the free wheel vehicle. Any limitations of capacity under which these types of vehicles formerly laboured no longer exist.

That further mechanical improvements will be made in transit vehicles is certain. With the history of the last twenty years in mind, it is impossible to believe otherwise. This belief has far-reaching effect on any present consideration of the general problem. But at the moment there is no indication that any new rival will appear to combat the division of the transit field among the self-

powered bus, the trolley coach, the street-car, and its special offshoot—the rapid transit railway. As to the circumstances under which one or other of these vehicles should be used in transit, there is no fixed rule; essentially it is a matter of relative cost, but so many special factors affect cost that each case must be decided on its own merits.

*Exigencies of City Site.* The topographical features of the city site and their effect on the class of development and flow of traffic throughout the area may well be the determining factor in the type of transit service.

A semi-circular city, such as are the majority of our lake or river cities like Toronto, Detroit, or Chicago, requires much more transit service than if the same population were distributed in a full circle around the downtown. The average distance of haul will be longer. As traffic is essentially all one way, either inbound or outbound, at rush hours, the number of vehicles required to move the peak load is greater, while the opportunities for through routing are more limited. For all these reasons the congestion of private motor vehicles will be greater. The drift uptown of the business and traffic centre of the city through the years is likely to proceed at a faster rate than in a city where the centre is fed from all sides, and tends to stay fixed. This movement may represent a substantial measure of obsolescence of track and properties in the downtown area during the course of a decade, and is a minor example of the waste that could be avoided by proper city planning.

If the community is located on a narrow island like New York, or in a narrow valley, or along a beach backed by marsh or mountains, the flow of traffic is confined to a narrow ribbon and is pre-eminently long haul. Rio de Janeiro is an outstanding example in which traffic is concentrated into narrow throats. The best residential quarter of the city with a population of at least 500,000 has its sole access to the main part of the city by a single throat only wide enough for two narrow traffic streets side by side and the six-lane shore boulevard. On the other side of the city an even larger population has its only access to the centre through three narrow defiles between precipitous hills. The transit solution under such conditions of heavy long-haul ribbon traffic, and paucity of street space, is manifestly rapid transit.

A city may be set on the side of a hill like Duluth, or San Francisco, where operation on the streets running directly up the

hill may be impossible. There may be steep, tortuous hills to climb, undesirable for tram operation, unsuitable to bus operation, but quite satisfactory for trolley-bus operation. The town may be cut in two by a wide extent of waste ground with no traffic, which might make it economical to run large units spaced at wider intervals than would otherwise be attractive service. A town may be cut to pieces with railway tracks, making it costly and inexpedient to cross them, particularly with street-car tracks, at more than a minimum number of points. A city may inherit from its historic past a downtown area of narrow streets, possibly interspersed with historic monuments, churches, buildings, cemeteries, parks, which together with the value of land in the area prohibit improvement. The city centre may be located on a site more suitable for its original purpose than for the business area of a modern city. Pittsburg is an example, with its down-town crowded into the triangular flat at the confluence of its two rivers. Great city-planning expenditures have had to be made to provide ingress and egress to the triangle. Sao Paulo, Brazil, has the same problem in reverse. A city with twice the population, though not the wealth of Pittsburg, the central area occupies a triangular shaped hill much more suitable for its original purpose—a defensive post against attack—than for the financial centre of a great city.

Due to lack of planning effort, streets may be narrow, tortuous, or discontinuous, and through streets non-existent. Natural barriers, hills, or ravines may exist, which, until broken, demand very roundabout transport, and when broken may cause substantial obsolescence to the property represented by the former transit route. Barriers may develop through the non-co-operation of adjacent municipalities, or from franchise limitations, or from political or psychological considerations, or from spite, and quite frequently from class or colour distinctions. Every one of these factors affects the transit problem. In no two cities is the problem the same.

Sometimes the fortuitous combination of circumstances makes a vast difference in the transit problem. The Hudson's Bay Company kept a square mile of land immediately north of the business area of Edmonton off the real estate market until just prior to the depression and forced the development of the city into a U shape around it, to the vast advantage of the street-railway system. Traffic can be concentrated into two or three cross-town well-

served and profitable main lines, all of which traverse the business area from end to end without any waste mileage.

All such factors, natural and man-made (and every city has its own special set), have a controlling effect on the type and extent of transit service required and possible in any urban community.

*Character of Population—Riding Habit.* Quite as pronounced in their effects on type of transit service are the habits of the population. Is the city we are dealing with primarily an industrial city, with heavy movements of passengers night and morning, or at shift-changes, with relatively little movement at other hours? Is it the habit of the housewives to do their daily shopping at or in the vicinity of a central market, or in community shopping districts? Is it the habit of office and factory workers to eat lunch or dinner at home at midday? Are schools and colleges so located that there is a high percentage of children and students riding to school, and in which direction at peak hours? Do people travel down again at night to shows and the like? To what extent do people own motor cars, and to what extent use them, and during what season? How far will people walk to a transit line, and what fare can or will they pay? All such considerations affect the riding habit on the common carrier system. Each town or city has its own distinctive daily riding characteristics as a phase of its distinct personality.

The so-called riding habit is the number of rides per annum taken per head of population. Such figures when obtained are seldom comparable city against city owing to the difficulty of deciding just what population is served by any transit service. However, estimates of future riding are now much less imperative than they were before the motor vehicle appeared. When fixed installations had to be provided before any service was possible, and where the life of those installations during which they would be paid for was figured as twenty-five, thirty, or even fifty years, the most accurate possible estimates of future riding were necessary. Today any new service would be instituted with buses, and fitted to the requirements by actual experiment.

Much more important is the daily flow of traffic on each route during the peak fifteen or thirty minutes. That is the vital factor on any transit system. It determines the number of cars or buses that must pass a given point in a given direction during that number of minutes of peak headway. The maximum traffic to be

moved in one direction during the interval equivalent to the round-trip time allowance for the particular route determines the total number of vehicles necessary for that route. During other like intervals employment can be found for only a part of this equipment. This is the problem of the rush hour. Where can men be found to work only three hours per day, and how can equipment earn its fixed charges operating only one trip night and morning? This curve of daily riding is the dominant factor in the financial operation of any urban transit system. It governs both capital investment and day-to-day operating cost, and as such governs the character of the service at every point.

The form of this curve will vary from city to city, and to a greater degree from country to country, with cultural and national characteristics. The typical form for the United States and Canadian industrial cities shows tremendously sharp peaks of travel at the morning and evening rush hour. The larger the city, or the less possibility of walking to and from work, the higher the peaks. They are relatively greater where business is concentrated in one central area with a heavy morning inbound movement and a negligible outbound movement, with the reverse in the evening. If industrial development is situated in the outlying areas of the city, with a great commercial development at the centre, it is possible there may be both outbound and inbound peaks with a lag in time between them sufficient to permit the same equipment to meet each peak. If the peaks are co-incident the sum of the two determines the equipment requirements.

In Calgary, the C.P.R. shops and other heavy industries are at the extreme south-east corner of the city, five miles beyond other urban development, but being inside the city limits, transit is provided for the universal fare. This is such an apparent example of service provided at a loss, that the city has for years voted a special annual subsidy of \$11,000 to the Street Railway Department to offset part of the loss on this service. A single car provides all necessary service during normal hours; not less than twelve are required at morning and evening rush.

A city of the contrary type is Hamilton. Though heavily industrialized, an unusually large proportion of workers have to date been within walking distance of their homes. This is indicated by the small expansion of service at rush hour. In 1934 the rush hour increase of service was 20 per cent on the street-cars and 40

per cent on the buses, compared to an increase of 150 per cent in service in Toronto at the same date. As suggestive of one reason of this low peak, is the great loss of traffic to private motor cars as well as that occasioned by motorists giving lifts to friends. A very exact measure of the extent to which this last is done is given by the statistics of riding on a half-mile stub service given night and morning from Burlington Avenue to a manufacturing plant with some 700 employees. During the first eight months of 1934, out of every eight workmen carried to the plant by street-car, five got other transportation homeward.

Ottawa is rather a peculiarity among American cities, enjoying the advantages of a noon peak in traffic. The great body of government employees, favoured with a longer than normal lunch hour, are able to get home at noon. As Ottawa becomes larger and more industrialized, the amount of this noon traffic and more especially its relative amount will tend to lessen.

In Mexico City the traditional habit of a noon siesta created an absolute peak of traffic at one o'clock, when the whole downtown tightly closed up until three. In a city of 800,000 people, the suddenness of this peak, and the utter impossibility of meeting it on any economic basis, was one of the contributing factors to the autobus competition which has bankrupted the tramways. Within the past few months, the government has ordered all government offices to keep open continuously through the noon hour, in an attempt to break down this noon-day peak.

The staggered hours of business which have been the general rule in Brazil for a long period, have had marked effect on the curve of riding. The absolute peak of traffic occurs in Sao Paulo at six-thirty in the morning. Traffic starts from nothing at 4.30 A.M. and steadily rises to 6.30 A.M. Many factories commence at 6.30 A.M.—the balance and all building construction starts at seven; but most of these workers are through at 4.00 P.M. There is also a very early morning movement of servants to the several markets for the day's supplies. Retail stores and many offices and schools open at eight, others at 8.30 A.M. By ten o'clock, the movement home at midday starts and continues until twelve; the contrary inbound movement commences around eleven and continues to one or one-thirty. The higher government and civic offices open at eleven o'clock, but run through until six or seven at night. Early in the afternoon commences a distinct shopping movement. The

homeward trend starts at 4.00 P.M. and rises to a peak between five and six-thirty, after which time traffic falls off to next to nothing by half-past eight. Virtually every car is in service all day long. It has been this ideal condition of staggered hours which has permitted the Sao Paulo tramway system to reach the end of its forty-year concession still in the black as regards operating costs, in spite of bus competition, possibly due to it, and in spite of a flat fare with a present exchange value of one cent for a length of haul of around three miles, while wages have increased two and a half times and imported repair parts five to ten times since the concession was signed. The riding density is 12.6 passengers per car mile.

Sao Paulo, a city of one and a half million, having doubled its population in the past fifteen years, is a circular city with a large population able to get home and return in an hour and a half. Santos, fifty miles distant with a population of about 150,000, has a most pronounced and difficult peak at 11 A.M., when the docks and coffee warehouses constituting its entire industry close for breakfast. Minimum half-hour traffic of 3,400 passengers occurs from 9.30 to 10 A.M. Maximum half-hour traffic is 9,400 passengers between 11 and 11.30 A.M.

Of all the utilities, urban transit is most affected by the physical characteristics of the city and the habits of the people. A transit service that fits one community may not be at all the best, either from the point of service or of revenue, in another community even a few miles away. While the average normal week-day represents the traffic of fundamental account, each day has its distinctive trend. In some cities, Saturday traffic will exceed that of every other day of the week, and present an operating problem to allocate vehicles and platform men. In other cities Saturday is a minor day. Similarly, traffic on Sunday may be entirely different as to amount, hours, or line of travel than on week-days, and strikingly different from one city to another. All these differences create great scope for operating ingenuity.

An even more difficult operating problem, arising out of modern trends of traffic, is the superimposed traffic occasioned by inclement weather, heavy snowfalls, and the like, when private motor cars are left at home while their owners turn to the common carrier service for their transport. They also use it as a subject of conversation and of letters to the newspapers.

*The Fare System.* The basis of fares and the method of fare collection are kindred matters exerting far-reaching influence on the community and on the transit system, and once adopted can seldom be altered.

The mileage fare system almost universal in Great Britain is conspicuous by its absence on American urban systems. It is a normal arrangement when instituted with the inauguration of a transit system in a well-developed community or series of communities, each basically self-contained, and where short-distance riding is preponderant. It is a normal condition on suburban services. It has one great advantage. Fares can be raised either by changing the amount payable for the specific distance, or the distance of travel for the specific amount, without showing discrimination. It has disadvantages in operation in that passengers must be checked at entrance and exit from the car. One-man operation with this fare system, while not impossible when passengers are limited in number, is impracticable on a large vehicle under rush conditions.

The alternative to the mileage fare is the flat or universal fare, where one price of fare will purchase a ride from anywhere to anywhere on the transit system. This is the almost universal American and Canadian practice. There are several variations of this fare system. Payment of the full fare may be required on each car boarded, or transfers from car to car may be allowed either free or on payment of something less than the full fare, and either on particular cars or for travel in a specific direction (as is the usual practice on surface systems), or without limitation as in the New York or Paris subways, where a passenger can ride *ad lib.* for one fare. The flat fare free transfer system suffers greatly from inability to adjust the fare readily to meet advancing costs. To a limited extent this can be done by the sale of prepaid tickets in groups of four, six, seven, etc., at various discounts, but each change in fare affects every passenger alike whether his ride be short or long.

It is these reasons—because every passenger is affected, and because of the difficulty of making small adjustments—that fare increases are so long postponed after the need of a fare increase is admitted by those in authority, and even when there is contractual provision for fare adjustment. The effect of city-wide fares is to “valorize” properties in the outer limits of the municipality. Except for the increased time absorbed in travel to and fro, a property on

the periphery of a city is equally economical as regards transportation as one much closer to town, and may have decided advantages as regards open space, newness, first cost, less taxes, etc.

There is no doubt that the flat fare system has had its share in producing the twilight zone of almost all American cities—properties not required for business and not competitive for domiciliary use. It has also worked to the disadvantage of the transit systems in steadily increasing the average length of haul; but no matter what the advantage of a mileage basis of fares may be, the likelihood of changing the universal fare system once established is nil. The fact that many owners have purchased their homes in the locations they did on the unconsidered assumption of universal fares continuing, they knowing of no other system of fare collection, is a political obstacle next to insurmountable.

The flat city-wide fare has certain advantages from the point of view of operation. It reduces the duties of fare collection to a minimum, and hence more readily permits one-man operation, with consequent lower fares (about one cent per passenger).

An alternative to both mileage basis and universal fare is the zone fare, where the zone limits are specified in the contract and a fare is collected for a ride of any distance within these limits. With this system of contractual zones, adjustment of fares to meet increased costs is even more difficult, as the zone fare is almost always a small denomination coin, and an increase to the next coin value means a most substantial percentage increase in the fare.

The method of fare collection adopted is an operating detail of considerable importance. In the United States and Canada, all fare collection methods presuppose the latent honesty of the conductor and the individual passenger supported by the collective interest and honesty of all passengers on the vehicle. When this public audit cannot be counted upon, the fare collection problem assumes very different proportions.

*Vested Rights.* The question of vested rights to a continuance of transportation to any particular area or along any particular street, or to the continuance of a special routing, is not so prone to become acute with a system of universal flat fares and free transfers. Is there any obligation to continue a long-established service after it has become non-self-supporting? Have the people who have purchased homes in a particular area on account of the convenience of a certain routing any special cause of complaint when that

convenient service is substituted by one much more inconvenient to them? Have the merchants who have located at the terminal of a line any basis of complaint when the line is extended half a mile, or have the owners of property in a downtown area falling into desuetude any basis of claim when service is abandoned in the area? Conversely, what coverage of an area represents a fair standard of transportation? Both these questions are seriously beclouded or dulled by the private motor car. They are more likely to attain acute proportion in the case of private operation than of public operation of the transit system. Nearly every private system can show examples of routing designed for past conditions and still continued unchanged long after those conditions have changed. For years in Hamilton after the James St. incline had ceased operation a special route was operated to its lower terminal though that was within 500 feet of another car line, and the limited served area was completely dead. But it was on contractual provision. There are two aggravating examples in Santos where routes must be maintained though the cars run empty and could be used to advantage elsewhere.

Canadian precedent appears to suggest that if the transit service is owned by the municipality, the municipal authority is sole judge of the service necessary in all its particulars. Where the service is operated by a concessionaire, the consent of the provincial authority, as given by a permanent board or utility commission, is necessary to any change in service.

The same applies to questions of adequacy of service. No set standard of what is proper service can be given. The standard adopted must be local to the particular city depending on its physical topography, the density of traffic that is found, the type of service that the riding public have become accustomed to, demand, or will stand for, and are prepared to pay for.

*One-man Operation.* One-man operation was introduced with one purpose only, to reduce cost of operation, but it has resulted in fewer accidents. In 1917 Calgary adopted one-man operation, one of the first examples on the continent. By 1924, 17.5 per cent of all motor rolling stock in Canada was one-man operated; in 1930, 31.8 per cent; and by 1938, 53.9 per cent. Two-man operation is now confined to the four major cities. Pay-as-you-enter street-car loading is normal practice with one-man operation. That it adds to traffic congestion at busy hours cannot be gainsaid. It

is one of the interesting inexplicabilities of urban transit that while there was at first strong opposition to one-man street-car operation, and such has continued at periodic intervals, there has been no similar opposition to one-man operation of single-deck buses irrespective of size.

The same reason that impels the use of one-man cars—viz., saving in platform expense—reaches its maximum fulfilment in rapid transit operation. Eleven subway cars can be operated with as few as three men when the trains are equipped with all mechanical safety devices and fares are collected before the passengers enter the train.

*What Type Service.* In the normal case of a medium-sized city, the problem of the type of transit on any particular route is largely a matter of the relative cost of providing the necessary service. But such decision will be affected by local considerations, weighted by common sense. For example, if in any community 90 per cent of the service could be most economically given by buses, there would be obvious operating advantages in giving all service by bus, rather than to introduce a small street-car or trolley-bus system on the basis of theoretical considerations alone. Conversely, if due to local considerations such as steep hills or very cheap electrical power, etc., trolley-buses were distinctly advisable on certain routes, it might well prove expedient to introduce them on routes on which their use was not so logical in order to provide the overall economies of a larger trolley-bus system. Similarly an extension of track may be warranted, not from the traffic directly passing over it, but from other economies found possible in the system as a whole; or an extension of existing service may be more convenient for the passengers, and good public relations warrant the added cost.

The largest factor in any decision regarding urban transit is the question of the future. The development in the motor vehicle, and in the extent and character of paved roads since 1920, could not be foreseen. For over thirty years the electric car had reigned supreme, and that its whole economic outlook could be undermined in so short a time and from so many angles was at that date unreasonable to expect.

The economy of a street railway rests on the principle that payment for rolling stock and power plant, as well as for roadbed, will be spread over an extended period of twenty to thirty years. To do this, it must be assumed that nothing will happen during the

period to disturb the railway's earning power: in other words, that nothing will or can take its place. Developments in the past fifteen years have made that position untenable to such a degree as to eliminate consideration of the surface street-car in transit—provided, of course, that the investment has not already been made.

With minimum first cost, minimum life, no special fixed permanent equipment, vehicles immediately and equally useful in other cities, the bus, even if its total costs of providing service do not show as low a figure as its competitors, has the outstanding advantage of presenting fewest hostages to fortune. Similarly a trolley-bus system has marked advantages as regards fixed investment over a street-railway system. The relative investment costs of equivalent small systems will approximate: bus, 25; trolley-bus, 35; street-car, 100.

*Existing Franchise and Service Considerations.* One of the chief determining factors as to type of transit service to be provided in any community is that already existing. A street railway is not a one-horse shay that suddenly collapses. Certain sections under heavier traffic wear out more rapidly than other sections, so that replacements are made from year to year, and at no moment is the entire system or even a substantial section of it ripe for replacement or abandonment. The recovery of the unretired investment in the existing system is a large factor in most decisions as to the type of service to be given. A heavy expenditure for new cars may be the economic solution, if by the continued operation of street-cars for another twenty years a goodly amount of frozen investment can be liquefied over that period. A great many compromise arrangements may be developed to keep property in service until completely paid for. The existence of electric power plants, direct current converters, and distribution systems may render trolley-bus operation on certain routes in replacement or extension of street-car service a more desirable solution from both the investment and operating angles than a bus system of one type or another which, in the absence of such assets, would represent the more advantageous answer to the local problem.

The character or term of the concession under which the transit system operates, or the fact that a service is municipally operated, may have an outstanding effect on the type of service adopted or continued. The limited ability of a private concessionaire to borrow money, as compared with a municipality, results in the former

turning to bus operation with its very limited requirements for fixed installations and with vehicles readily obtainable on the hire purchase plan, under circumstances of traffic that in the case of a municipal system might be best met by a continuance of street-car operation or by trolley-bus operation. It is unfortunate but true that a municipality will act far more promptly to protect its own property and revenues than it will to protect the property and revenues of a private concessionaire notwithstanding its agreement. It is interesting to speculate as to the extent that street-car operation in the United States has been abandoned in favour of bus operation, due to the American complex against public ownership and the inability of private concessionaires to finance street-railway betterments in the face of all the impediments I have mentioned. That it is a factor I have reason to know.

*Concessions.* The first urban transit lines were almost universally constructed by private parties under some form of concession or franchise from the municipal authorities. Contracts for thirty, forty, eighty years, even perpetual contracts, were entered into on the basis of a fixed unit fare, almost universally five cents in Canada and the United States. The slow but steady increases in costs of labour and material prior to the War were offset by savings in operation, larger cars, overcrowding, and such like.

Beginning about 1910, the desirability of fare increases began to be apparent, and by 1915 was pronounced. As costs of labour and material soared during the War and post-War years, the need became desperate. But when relief came it was as much for the car riders as for the transit companies. The general principle of service at cost was adopted, fares to be set from time to time by regulatory commissions to yield a reputed fair return on the value of the property used. The essential fault of all service-at-cost agreements is the lack of any provision for functional obsolescence. In fact, functional obsolescence and service at cost are inherently incompatible.

It is doubtful if any service-at-cost concession will ever be devised under the favourable circumstances surrounding the Montreal concession of 1918. The Quebec Legislature appointed a commission to devise a franchise, with authority to compel its adoption by the city and the tramways company. The result is probably the most theoretically perfect service at cost contract

existing. Another commission was appointed by the Legislature last year to see what should be done about it. The company is deprived of all operating initiative but is assured a return on the capital employed in the undertaking. There is no provision for amortization of capital, that is, no provision against sudden functional obsolescence. There is no obligation placed on the company to pay off bonded indebtedness, and the company has reserved very little of its annual stipend for that purpose. Except when surplus land is sold there is no direct provision to reduce capital account. If any item of property is abandoned, an amount equivalent to its original cost is drawn from revenue through the maintenance account and expended on replacements without disturbing the capital accounts. As there is a prescribed limit to the amount that can accumulate in the maintenance and renewals account (namely \$500,000), there is actually no way to take care of any extended effects of obsolescence. Property account continuously increased until 1937, since when there has been a slight reduction as small elements have been discarded and not replaced. As of December 31, 1939, the Tramways Commission allow a capital account of \$54,105,862. The company's balance sheet shows slightly less, or \$54,036,501, invested in property and equipment with bonds outstanding totalling \$47,802,200. Reserves for maintenance and renewals and autobus depreciation reserves total \$1,027,921, leaving net property account of \$53,008,580.

In the last analysis the City of Montreal is the chief sufferer. It can only end the concession by buying the tramways, which under present legal precedents means on a basis of reconstruction cost new less physical depreciation. It is fairly safe to assume that tramways will be operated in Montreal for a very long time.

The whole basis of payment to the company for its service of operating the tramways is a percentage of the amount of capital the company has tied up in them, and this procedure is the normal American practice. But if the tramways were to be suddenly wiped out and replaced by buses, the supervision of the transit service would be just as arduous a task, but the remuneration to the company would be barely a quarter of that now received.

The limited extent to which payment for services rendered in directing a utility is made on a commission or fee basis, wholly separate from the payment of interest on the capital invested in the undertaking, is surprising. It is only when a company falls

into receivership that this principle is applied in degree. The receiver is paid for his services of supervision. But the operation of any public utility is essentially a trusteeship.

The Sandwich, Windsor, and Amherstburg Railway has recently completely abandoned railway operation in favour of bus operation. (The question of unretired tramways capital has been left in abeyance.) Eighty-three buses now provide service and carried 9,793,324 passengers in the year ending October 31, 1940.<sup>7</sup> These vehicles represent an investment hardly in excess of \$700,000. In 1932, when 9,522,017 passengers were carried, this company had an investment of \$3,882,666 in the corresponding cars, track, and overhead line, or five and a half times as much.

This complete loss of any relation between the operating responsibilities and the capital investment necessary is another factor which has made urban transit in itself uninviting to private capital if remuneration is based on investment, and ancillary reasons for assuming the obligation are absent.

An even more important factor is that proper and economically operated transit service, if it is to provide the municipality with complete coverage, demands the protection of monopoly. This is impossible to obtain except under the most strict regulation. If the investor can exercise no control over the business in which his money is invested, it inevitably follows that investment is limited to a bond basis and the public authority must assume all responsibility for operating.

Public regulation is but a step on the way to public ownership. That march can be delayed only by the tacit recognition on the part of the public authority, as well as by the private concessionaire, of the extent to which its own interests are advanced by a due respect for the due interests of the other party—the golden rule if you like.

*Municipal or Government Ownership.* Of the thirty-six Canadian electric railways reporting to the Dominion Bureau of Statistics in 1939, eighteen were publicly owned, either by the municipality or by another public organization or authority. These operated 43 per cent of the total track, and carried 36.1 per cent of all passengers. Probably the greatest virtue in public ownership is the absence of permanent investment upon which dividends are expected in perpetuity. If a property's fare structure is sound and its revenues adequate, its invested capital is amortized year by

<sup>7</sup>*Canadian Transportation*, Jan., 1941.

year, outwitting obsolescence. Toronto rehabilitated, reorganized, and extended its street-car system in 1921-3, and had upon completion, as it has today, one of the outstanding street-railway systems on the continent. It got away on a new and self-supporting fare system, and by virtue of public ownership was from the first protected from competition and given freedom of action. It has had the advantage throughout of most efficient management and a minimum of bad public relations. But also because it is a municipal enterprise it has had a heavy financial burden. Rehabilitated when prices were at peak, interest rates included, it was financed on thirty-year 5 and 6 per cent serial debentures containing no provision for call before due date. Of the \$42,073,000 advanced by the city for the purchase, rehabilitation, and extension of the transit facilities within the city limits, there was outstanding as of December 31, 1940, \$19,170,000. While 54½ per cent of the sums borrowed have been repaid, interest and principal repayments continue at almost the same level for twelve years more, when the system as it stands today will be fully paid for. Before that date occurs, a considerable amount of the property will require renewal. Its last major track extension within the universal fare system was in 1925, and in its metropolitan system in 1931. Its track system has decreased 3 per cent since peak. To what extent should track be reconstructed and to what extent abandoned or removed to its own right-of-way? It is fairly safe to predict that the next ten years will see continued transition to other types of transit in Toronto. The continued reduction of its debenture debt will leave it free to act. That a property with capital assets of \$53 million, of which \$50 million is represented by property and equipment in the physical state that we see day by day, has after nineteen years of operation a bonded debt but slightly more than \$19 million and very fluid working capital, leaves little to be said with regard to public ownership, in Canada at least.

Detroit, Seattle, and San Francisco municipal systems are almost unique examples of publicly owned street railways in the United States. However, it is interesting to note that of the rapid transit systems in the United States, New York's is publicly owned and operated; Philadelphia's is publicly owned and privately operated; Boston has mixed ownership, and public control; Chicago's is privately owned and operated, with publicly owned facilities under construction. In the very citadel of private ownership,

New York, only this past year it has been found essential for the city to take over the ownership of all rapid transit services operating solely within the municipality. The New York rapid transit system now represents an investment of nearly a thousand million dollars on the part of the people. In the great capitals of Europe almost without exception, it has been necessary to bring public money or public guarantee to the support of the transit services.

*Rapid Transit.* As the size of the city increases, problems of urban transport become more complex. The ratio of private ownership of automobiles decreases, and their ratio of use as well. The riding habit (both total and by common carrier) increases owing to the greatly increased distances, while for the same reason the average length of ride increases. Heavy traffic is available and speed is an essential. A transit system completely separated from other traffic is the natural and warranted solution.

Separated rights-of-way for free wheel vehicles have been constructed in a number of cities, but so far none, except possibly very local ones, has been entirely given over to free wheel transit vehicles. But if independent right-of-way be available with adequate traffic, all the inherent advantages of rail transportation—capacity, and cheapness of operation—are once more available in undiminished form.

I am not going to enlarge on private right-of-way urban transit or rapid transit operation. Such can develop in two ways. It can be developed as a separate system from the beginning, or it can develop by the diverting of surface cars into stretches of private or grade separated right-of-way, as good opportunity offers, or difficulties in operating on the street surface at local points may warrant. Boston has probably the most extended system of sub-surface terminals and so-called surface subways on this continent, but examples can be found in many cities. It is more important to stress the purpose of such segregation of traffic, viz., to relieve traffic congestion on the street surface. If it is to the advantage of the transit service, it is equally of advantage to free wheel traffic, and any cost entailed must be assessed accordingly.

The most distinctive feature of urban transit has been its use of the public ways. By whomsoever operated, there has been municipal partnership in that the municipality has supplied the highway on which to operate.

Rapid transit right-of-way can take many forms. The electri-

fied suburban service of the Illinois Central into Chicago is as much a rapid transit service as the New York subways or elevated railways. Topographic circumstances, alone, determine whether a rapid transit railway or a grade separated surface railway will run in tunnels underground, on structures overhead, or on fenced right-of-way on the natural surface of the ground, in cutting or on embankment. The type of construction found possible or necessary is incidental to the prime purpose of providing clear tracks completely segregated from other traffic. The cost of doing this is dependent, to a very large degree, on the physical conditions that distinguish every city from every other city, and on taking advantage of the always present special opportunities presented by the individual city.

*The Future.* What is the future trend of urban transit? Urban transit must continue to be provided. There is indication that the density of automobile ownership may have nearly reached its peak. There is no indication of any decline in density of use, though what may be the final result of the great expansion of air-mindedness that this war will inevitably bring, is still for the future to disclose.

The census in the United States last year showed that the era of ever-increasing population of cities is very definitely over. The motor vehicle and paved roads have accomplished this. The aeroplane may carry decentralization a stage further. Nevertheless the great conglomeration of cities will remain, each the focal centre of increasing numbers of people though these may be spread far beyond the densely built-up centre. For the most part, these people will have their private means of transport, but for those who have not, either from lack of means or preference, there will probably always be necessary through these areas a service of common carrier transit. The motor car and our "hitch-hiking" habits have led us to consider walking as a hardship. If a service of transit must be provided, yet cannot obtain sufficient patronage to be self-supporting, it will have to be subsidized.

Given clear streets or independent track, there is no reason why street-cars should not continue in perpetuity. But a free track in a paved street is hardly to be hoped for in this motor age, and if the street-car in mixed traffic cannot obtain the latent advantages of track, its work can be performed just as well, with advantages to other traffic, by a free wheel vehicle.

The motor car has made us impatient of delays, impatient of waiting on the convenience of others. Transit services will have to be frequent, both in the proximity of the routes to one another and in the time spacing of vehicles on those routes. Paved streets are certain to exist in every direction. There will be no need of track to attain smooth riding.

The trend will unquestionably be to free wheel transit, particularly where the city is spread out, streets are ample, and there is a dense use of private motor vehicles. Buffalo, a city of 550,000, looks forward to 100 per cent free wheel transit service within ten years; Houston, with a population of 386,000, is as yet the largest city on this continent to dispense with street-cars. Buffalo has one automobile to each 4.7 persons; Houston, one to each 3.9 of the population.

The size of vehicle will depend on local characteristics. Where the topography or size of the city is such that traffic becomes concentrated on a few routes, larger units will be used. Already, transit type free wheel vehicles of as great capacity as any modern street-car, seating fifty-six and standing a hundred additional are available. One such vehicle equipped as a trolley-bus is operating in Cleveland; another diesel engined is operating in Baltimore. These have all the advantages of capacity, pick up, speed, etc., of the street-car, without the cost, obligations, or restrictions of track.

It would be an irresponsible prophet who would predict how long street-railway tracks will continue on the surface of the streets. It will depend on the size of the community for one thing. It is certain that no new system will now be organized. Existing systems will probably be with us for at least a generation, but the effects of the war may do much to alter what appears to be a settled tendency.

Essentially the problem before all street railways is one of gradual change-over to other types of operation. Until the bulk of the outstanding capital investment in each can be retired, they must continue to operate. Due to alterations in the traffic flow from time to time, certain track, track special work, or cars may not need to be replaced when worn out. Minor lines from time to time will be replaced by free wheel vehicles, but there are certain main stems of a street-car system, and these invariably occupying the congested main approaches to the downtown, which must be left in use while any part of the street railway exists. At the same

time, there are many streets on which, because of their width or their direction crosswise to the main traffic flow, it will be possible to operate street-cars for many years to come without undue conflict with free wheel traffic.

The present chief function of the transit service is the conveyance of passengers to and from the downtown area and other business and industrial centres—concentrated loads at morning and evening rush hours. This is more and more the case as the size of the city increases. Approximately 70 per cent of all passengers riding on the T.T.C., for example, enter or leave the downtown area.

The solution of the problem of freeing these heavily trafficked arterial streets of street-cars for the relief of general traffic, of expediting the transit service, and of preserving the investment in the railway system by continuing the major part of it in service for longer than would otherwise be the case, can in particular cases be accomplished by the construction of relatively short stretches of surface subways; that is, subways through which to operate the normal type of street-car. This is a solution unquestionably for the advantage of general traffic, and should be treated as such. It is in most instances the cheapest and most effective form of street widening.

The proposal last month of the Toronto Transportation Commission to remove its tracks from Avenue Road to facilitate general traffic in consideration of the city co-operating in the development of an open track cut-off through the Nordheimer ravine is the first stage of a policy which is almost inevitable. To the extent that these off-street improvements permit a saving of car hours, the transit system might reasonably obligate itself for the improvement, but to no greater extent.



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## AN ASPECT OF THE BRITISH RAILWAYS ACT, 1921

W. G. SCOTT

THE Railways Act, 1921, was the instrument whereby the railways were returned<sup>1</sup> to their owners upon the cessation of hostilities in 1918. This Act has often been referred to,<sup>2</sup> although not fully understood, in evidence presented to Canadian Royal Commission investigations undertaken in recent years to determine the advisability of endorsing unification proposals as a remedy for Canada's railway problem. Therefore to the Canadian student of transportation the Act conveys a single meaning—an experiment in railway amalgamation. But the large-scale consolidation of Britain's railways into four groups<sup>3</sup> was only one of several purposes of the Act. It also aimed at readjusting the relationship between the railways and their shareholders; the railways and the state; the railways and their employees; the railways and consumers of transport; and the railways and their competitors. Each of these has raised problems of no less significance to the course of Britain's transportation development than the amalgamation experiment itself. It is the intention of this essay, therefore, to consider an equally important phase of the Railways Act, 1921—the creation of an arbitrary revenue basis, which the amalgamated companies should be entitled to earn in the future, and the setting up of a Railway Rates Tribunal to assist the railways to maintain this revenue.

<sup>1</sup>On the outbreak of war in 1914, a Railway Executive Committee, consisting of the General Managers of the principal railway companies, was set up by the government to assume control of the railways in order to mobilize them for military service.

<sup>2</sup>Proponents and opponents alike of the Canadian unification scheme have made full use of Britain's amalgamation experiment to justify their respective submissions. This has been possible because the compulsory regrouping of the railways into four large privately-owned state-controlled oligopolies has been highly advantageous to certain interests, while at the same time equally injurious to others.

<sup>3</sup>The four amalgamated companies were grouped from 120 companies in all—27 constituent, and 93 subsidiary.

The essay will be developed in two parts: first, a consideration of the relevant provisions in part III of the Act, which defined the standard revenue basis, and its proposed maintenance by a rates tribunal; and, second, a critical examination of the basis chosen for the standard revenue, and the interpretation which the Tribunal has placed on its duties under the Act.

## I

Under the agreement with the railways in August, 1914, the government guaranteed the shareholders an annual dividend equal to that received by them in 1913, regardless of whether it was earned or not. In addition it agreed to return the properties of the railways to their owners at the conclusion of hostilities with equity unimpaired. In 1921 the Railways Act was passed. Part I provided for the regrouping of Britain's railways into four amalgamated companies. During the process of amalgamation and the exchanging of stock of the old companies for stock in the newly-created companies, the capitalization of the amalgamated companies was written down by £152 million, or from £1,200 million to £1,048 million. In doing so the amalgamation tribunal regarded the capitalization of net earnings as the fairest method for revaluating railway property.<sup>4</sup> Having grouped the railways into four companies, and arrived at what appeared to be a fair capitalization of the property, the Act went on to assess the compensation which the government owed to the railways for their use during the War; and to arrive at a basis on which to determine the future net revenue which they should be entitled to earn. The first of these problems was quickly disposed of. The government agreed to pay the companies £60 million compensation for the use of the railways during the War.<sup>5</sup> The provisions of the Act defining a standard revenue brings us to the subject-matter of this essay.

Section 58 (1) of the Act accepted the railways' net earnings of 1913 as constituting a reasonable basis for future earnings of the

<sup>4</sup>Reproduction costs as a revaluation basis was dismissed as being impracticable; original investment as a criterion was considered to be equally undesirable because of the excessive original construction costs of British railways; and stock exchange valuation, particularly as regards ordinary stock, would have been based on abstract speculation rather than true knowledge.

<sup>5</sup>The Railways Act, 1921, section II. Half this sum was liable to income tax, therefore the net amount paid by the government was £51 million.

amalgamated railways. This has become known as the standard revenue basis, and is a sum which under conditions of efficient and economical working and management will yield a net revenue equal to that earned in 1913 by the constituent and subsidiary companies of the amalgamated group, and which in that year amounted to £50 million. In addition to this the standard revenue was to be subject to increases by the Railway Rates Tribunal under the following conditions:

- (1) a reasonable allowance was to be made by the Tribunal for capital expenditure which had not become fully remunerative by 1913, and which, therefore, had not been reflected in the profits of that year;
- (2) an additional 5 per cent was to be allowed to remunerate capital which the railways had made during the period of government control of their properties;
- (3) such allowance as appeared to the Tribunal to be reasonable in respect of the capital expenditure on works which had enhanced the value of railway property, not being included in (2), and which had not become fully remunerative by 1913;
- (4) an additional allowance of not more than  $33\frac{1}{3}$  per cent was to be made for economies effected under the amalgamation experiment; and
- (5) an allowance for future capital expenditure of an approved nature, undertaken by the railways subsequent to the conditions when the Act became operative.

By 1937,<sup>6</sup> as a result of these allowances, the standard revenue had increased from £50,000,000 to £51,359,059.

To assist the railways to earn this standard revenue the Act created<sup>7</sup> the Railway Rates Tribunal, and gave it wide powers to ensure the maintenance of the standard revenue.

Under section 31 of the Act the Tribunal was empowered to

<sup>6</sup>*Proceedings of the Railway Rates Tribunal, 1937.*

<sup>7</sup>The Railways Act, 1921, part III, sections 20 ff. The Railways Rates Tribunal is Britain's equivalent of the Canadian Board of Transportation Commissioners. But in certain respects its powers differ fundamentally. Unlike the Board of Transportation Commissioners, it has no jurisdiction over the law of "undue preference," and/or "adequacy of facilities" offered by the railways—these coming under the jurisdiction of the Railway and Canal Commission. But it has infinitely wider powers over freight rates in that it has discretionary powers over the initiation of freight rates for traders and fares for passengers—a matter which is outside the scope of the Canadian Tribunal.

construct the schedule of standard and exceptional charges<sup>3</sup> for the four companies.

Section 59 instructed the Tribunal to review annually the standard and exceptional charges as settled by section 31, in the light of the standard revenue earned for the particular period under consideration. The Act then went on to define the scope of the Tribunal's powers under these annual reviews; section 59 (3) and (4) contemplated two contingencies. The first of these being that the net revenue obtained by each company proved to be in excess of the standard revenue; the other being that the net revenue proved to be less than the standard revenue. If it were found to be in excess of the standard revenue, then section 59 (3) directed the Tribunal to order a general reduction in rates to the extent of 80 per cent of the surplus, allowing the railways to retain the remaining 20 per cent. But in the event of the net revenue being found to be short of the standard, section 59 (4) instructed the Tribunal so to modify the standard charges as to correct the deficiency.

Having determined that the net revenue was below the standard, the Tribunal was then to consider whether such deficit was due to lack of efficiency or want of economy on the part of railway management. If the Tribunal were satisfied that it was not due to either of these causes, the statute then went on in language that was mandatory in a sense, but yet qualified by discretionary power, to instruct the Tribunal to make such modifications in all or any of the standard charges as it deemed necessary to enable the railways to earn their standard revenue, the qualification being that if it were evident that the deficit was of a temporary nature, modifications need not be made. While the object of the Tribunal was to enable the companies to earn the standard revenue, no modification

<sup>3</sup>No mention has been made of the system of charges which the Railways Act, 1921, introduced. However, it is very similar to the Canadian system. The standard charges correspond to Canadian standard tariffs, and exceptional charges to our special and competitive tariffs. However, one important distinction should be noted. The Railway Rates Tribunal has complete power to order railways to grant exceptional rates, and, indeed, must do so if the granting of such rates is in the best interests of the standard revenue. The Board of Transportation Commissioners' powers, on the other hand, are limited to determining the "reasonableness" of special and competitive tariffs after railways have initiated them.

need be made other than such modification as the Tribunal considered to be necessary in order to attain that object.

Charges of ancillary businesses of railways did not come within the jurisdiction of the Tribunal, but it was given discretionary power to take these charges into consideration in considering the modification of rail charges. If it were of the opinion that such charges were unduly low, and inadequate to meet the costs of operating the ancillary businesses, it could order such reductions in rail charges as would have been possible had it not been for the deficits incurred by the ancillary businesses. But the Tribunal was not empowered to increase the charges of the ancillary businesses themselves.<sup>9</sup>

On the whole the Act was favourably received by the railways. A letter to the shareholders of the Great Western Railway Company stated "that the Bill in the opinion of the majority of the companies goes far to meet the views of the companies," and agreed with *The Times* "that in the main the Railways' Bill is acceptable as a fair settlement." When it is realized that the effect of the legislation was to approve of a future revenue for railways, which, if earned, would assure the debenture and preferred shareholders of the amalgamated companies their interest under conditions of greater security, while at the same time leaving a surplus sufficient to pay an 8 per cent dividend on common stock, it may be readily appreciated why the bill was accepted as a *fair settlement*. The railways considered the treatment of surplus revenue to be an unfair imposition on them, but being fully conscious of the ease with which modern corporations can manipulate financial statements to conceal surplus earnings, raised no serious objection against the provision.<sup>10</sup>

Since the enactment of the legislation, and the defining of a standard revenue, the actual net revenue of the amalgamated companies has fallen far short of the standard. In no year has it been earned, and during the depth of the depression the deficit reached the staggering sum of £24,934,000 in 1932.

The following statistics<sup>11</sup> give a complete picture:—

<sup>9</sup>Railways Act, 1921, section 58 (4).

<sup>10</sup>Evidence presented at the *Proceedings of the Railway Rates Tribunal* indicates that the railways have been making certain charges to revenue which rightly belong to capital account.

<sup>11</sup>The figures are only approximations, but they are sufficiently accurate to

Year	Net earnings £ (in millions)	Deficit on standard £ (in millions)
1922 .....	41	3
1923 .....	43	7
1924 .....	39	11
1925 .....	37	13
1926 .....	39	11
1927 .....	42	8
1928 .....	31	19
1929 .....	45	5
1930 .....	38	12
1931 .....	33	17
1932 .....	26	24
1933 .....	29	21
1934 .....	31	19
1935 .....	33	17
1936 .....	36	14
1937 .....	38	12
1938 .....	29	21

The railways have attributed their failure to the hesitancy on the part of the government to equalize conditions of competition between road and rail.<sup>12</sup> But road competition has been only one of several important considerations. Therefore, we shall now turn to a closer examination of the standard revenue, and the part played by the Railway Rates Tribunal to maintain it, in an attempt to determine some of the more important factors behind the railways' failure to earn the standard revenue.

## II

Considering first of all the standard revenue, we find that it was constructed on an unsound basis. It was an arbitrary creation based on past profits without any attempt having been made to estimate future demand for railway services. Past earnings may be useful as a guide, but are not necessarily any criterion on which to base future earnings, unless it be assumed that the purpose of our economic system is to maintain intact the values and earnings of particular industries, under a dynamic economy. Inasmuch as

illustrate the extent to which the railways have failed to earn the standard revenue. Compiled from *Proceedings of the Railway Rates Tribunal, 1922-38*.

<sup>12</sup>See the railways' "Square Deal" proposals.

earnings fluctuate widely from year to year and particularly from boom to slump, had the standard revenue been based on an average of past earnings over a given period, there might have been some justification for using past profits as an index of future earning power. But to have arbitrarily singled out a particular year, one in which the railways had enjoyed a measure of prosperity unsurpassed in the preceding seventy years of operation, was indefensible.

But even assuming a stability of earnings in the past, economic conditions prevailing in the industry at the time of the creation of the standard revenue, and not the conditions under which the 1913 net revenue had been earned, should have been the governing factor in deciding a future revenue basis. Very different conditions existed in the industry in the years 1913 and 1911. In contrast to conditions existing in the industry in 1921, and subsequent years in which the railways were endeavouring to earn the standard revenue, 1913 represented a year in which the railways enjoyed a high degree of monopoly control over the market, high charges, and low labour costs. Pre-War railway prosperity was partially due to the quasi-monopoly position which the railways enjoyed in the transport market. Under such conditions the railways had been in a position to adjust rates with a view to earning the maximum revenue above cost. But in the post-War era with the appearance of road competition, the market became highly competitive, a factor which was entirely overlooked in reorganizing Britain's railways, and assessing their future earning capacity. In 1913 railway rates constituted a heavier burden on British traders than that borne by the business interests of any other country in the world.<sup>13</sup> The two important explanations were, the lack of effective competition, and the over-capitalization of British railways. Therefore, the bill was framed and passed on the assumption that rates would be lowered. There is no specific commitment to this effect in the bill itself, but in introducing it the Minister of Transport stated, "that if his measure were adopted the rate tendency is bound to be downward."<sup>14</sup> Surely if this were to be the case the standard revenue should have been less liberal. A third factor of importance was the question of wages. Pre-War wages were much lower than the scale introduced during the War, and main-

<sup>13</sup>Even in 1924 British freight rates were double those of the United States (*American Economic Review*, March, 1924).

<sup>14</sup>142 H.C. 356.

tained in the years during which the railways were struggling to earn the standard revenue. Therefore it is difficult to understand how the framers of the Act imagined that the railways could maintain a standard revenue equivalent to that earned in 1913, when conditions foreshadowed more competitive market conditions, higher costs of operation, and lower revenue per unit of traffic.

There are, however, two possible explanations for their seemingly unjustified optimism. In the first place substantial economies were anticipated from the amalgamation experiment, and implicit faith was placed in the machinery given to the Railway Rates Tribunal to adjust charges successfully so as to stabilize revenue; and, second, they fully expected the railways to be the greatest beneficiary under a post-War expanding economy.

The first factor, that of economies of operation, has had little effect on increasing the railways' capacity to earn the standard revenue, because they have not materialized on the scale originally anticipated. It is difficult to measure with any degree of accuracy the economies which have resulted from the amalgamation; but it is safe to say that they have fallen far short of the Minister of Transport's original estimate of £25 million. Several factors have been responsible. The provision <sup>15</sup> in the Railways Act for compensating displaced labour, together with the higher rate of wages paid to railway labour, have prevented large-scale economies.

Before the war, this legislation which protects employees would not have been so important because railway wages were very low. There was, therefore, less incentive for the railways to substitute machines for manual labour. As a result of the war, however, the railway wage bill increased by approximately 150 per cent.; and the general level of wages has been maintained since the war period. Under such conditions the railways would normally wish to purchase machinery to do the work of high-priced labor; but under the conditions imposed by the Railways Act, 1921, this would mean in many cases, the costly process of compensating men for the loss of employment in addition to the capital expenditure for the machine. The result is that the railways have tended to lag behind the mechanical standards of efficiency which prevail in ordinary business enterprise.<sup>16</sup>

The high percentage of privately-owned traders' wagons, and the inadequacy of demurrage charges on wagon stock have been

<sup>15</sup>Railways Act, 1921, Third Schedule, para. 5.

<sup>16</sup>H. C. Kidd, *A New Era for British Railways: A Study of the Railways Act, 1921, from an American Standpoint, with Special Reference to Amalgamation* (London, 1929), p. 131.

additional limiting factors to economical railway management. Roughly speaking there are some 650,000 private wagons in Britain, or in the neighbourhood of 40 per cent of the total stock of the country. This right accorded the British trader to provide his own mineral wagons has done much to slow up the process of standardizing railway equipment through which economies of large-scale production were to be realized, and has produced a high degree of empty wagon mileage. The low scale of demurrage charges has stifled the traders' incentive to unload their wagons quickly. Both factors have given rise to those wastes associated with bad usage of transportation equipment.

The prohibition imposed on railways in connection with the law of "undue preference,"<sup>17</sup> and the obligation to provide "reasonable facilities" have further limited economical railway operation. Historically, both regulations are products of an era in which railways held a monopoly control over the transportation market, and as such were justified. But from 1921 to 1933 the railways had a legitimate grievance against this prohibition. Prior to amalgamation, rates quoted to commodities moving over the lines of company A could not be challenged as constituting an undue preference against similar commodities moving over the lines of company B. Therefore, if operational costs were higher for company A, it could increase its rates without fear of the law. But with the consolidation of the railways into four companies under the terms of the amalgamation agreement, the application of the law of undue preference was greatly extended; and until the introduction of "agreed charges" in 1933 the railways were not permitted to make an exceptional arrangement to meet a special case without having to apply it to hundreds of other cases under conditions which would be entirely unremunerative. Even in connection with agreed charges they must proceed cautiously before a court of law, the proceedings of which are often protracted, and invariably costly. The road hauliers, on the other hand, have enjoyed superior bargaining power because of their ability to adjust rates at a moment's notice to meet the circumstances of each individual case.

To aggravate the railway's position the Railway and Canal Commission has applied a rigid legal interpretation to the meaning of undue preference; 75 per cent of all cases arising out of the

<sup>17</sup>Commonly referred to in Canada as "unjust discrimination."

question of undue preference cannot be attributed to discrimination at all, but rather to some justified economic cost differential.

The obligation to provide reasonable service without defining what constituted a reasonable service has also been a handicap to the railways. Road transports can adjust their service as conditions require, and can withhold facilities if they feel that it is in their best interests to do so. Thus, if at a trucking terminal the road haulier finds that there is sufficient traffic to fill one truck economically, he will not run an additional truck to accommodate the remaining traffic, unless such traffic is willing to meet a charge sufficiently high to pay his marginal costs of operation, plus a reasonable profit. But the railways are under a statutory obligation to carry all the traffic offered them, even if it means conveying an additional wagon at less than costs of operation. Had railways been able to curtail facilities on an economic basis, by holding up a train until there was a full load, or conversely refusing to carry an unremunerative consignment, their financial condition might have been considerably different.

This inability of railways to adjust either charges or service in accordance with demand has, therefore, had a detrimental effect on the standard revenue.

It is evident from opinions expressed in *Modern Transport*, and by railway management itself, that the railways anticipated increased traffic during the post-War reconstruction period. But two factors were to stand in their way—the successful development of road transportation, and an unparalleled industrial trade depression.

By 1921 road transportation had made an impressive appearance. But the general feeling of the railways was that this new means of transportation would have complementary rather than competitive effects on railway revenue, and was, therefore, discounted as a potential competitor; and the Railways Act, as evidenced by the stringent provisions to curtail monopoly exploitation, took for granted the continuance of a railway monopoly. But it was soon appreciated that road transportation was cheaper and more convenient for much of the railways' traffic, and the effectiveness with which it found itself able to compete with railways gave a tremendous impetus to the growth of the industry.

The following statistics illustrate the extent of this development:

Year	Total number of motor vehicles in use
1913 .....	207,878
1918 .....	160,222
1921 .....	492,888
1922 .....	575,823
1923 .....	680,156
1924 .....	811,947
1925 .....	949,397
1926 .....	1,082,930
1927 .....	1,209,928
1928 .....	1,332,752
1929 .....	1,459,732
1930 .....	1,560,249
1931 .....	1,588,675
1932 .....	1,642,575
1933 .....	1,738,972
1934 .....	1,824,013
1935 .....	2,070,715
1936 .....	2,271,867
1937 .....	2,461,833

It must be admitted that at the time of creating the standard revenue, it was impossible to forecast accurately the phenomenal advance which was to be made in the internal combustion engine, which has made possible an era of road development on the scale witnessed in the past twenty years. Nevertheless, the failure of the Act to provide for such an eventuality, when assessing the railways' potential earning capacity, was an inexcusable error. Scepticism of road possibilities, rather than lack of knowledge, seems to be the logical explanation for such an error.

In addition to road competition, traffic failed to increase partly as a result of the interpretation given to section 59 (4) of the Act, particularly during the depression years. This section directed the Tribunal so to modify charges as to maintain a constant revenue. The Tribunal, assuming conditions of monopoly and inelasticity of demand, interpreted "modify" as meaning an increase in rates when traffic was declining, and a decrease in rates when traffic was increasing. The effect of this would have been that in periods of severe depression when traffic is declining rates were to be increased which in turn would result in a further curtailment of demand, and a corresponding decline in traffic. The opposite procedure was to be adopted during periods of prosperity. This, of course, is contrary to ordinary commercial practice, and in the

case of the railway industry is a contradiction of the principle of "charging what the traffic will bear." When applied to railways it ignores the fact that traffic density is closely tied to business activity, which in turn depends largely upon the movement of commodity prices, and consequently converts railway charges into a more rigid element in the cost structure of commodities than wages or debenture interest.

The Tribunal might well reply that even were this criticism justified, it has had no practical effect on the railways' earning capacity, inasmuch as there has been only one general increase in charges since the Act came into operation. Although, with the exception of the 5 per cent general increase in charges in 1937, there has been no absolute increase in rates, still there has been a considerable *relative* increase. By 1933 commodity prices had fallen by more than 30 per cent as compared with 1928, the year in which standard charges went into operation; and consequently rail charges for the transportation of many commodities had increased considerably as a percentage of selling price.

The railways have been forced to reduce merchandise rates, in order to compete with road competition. But in the case of the heavy industries such as coal and iron and steel, which have been particularly hit by the depression, and over which the railways have a fairly complete monopoly, although there have been only slight absolute increases in charges, there have been considerable relative increases. These industries have attempted to obtain reductions on the grounds that the adoption of such a policy would increase production, stimulate traffic, and in general increase revenue. They pointed to the successful results of a similar policy forced on the railways by road competition, in the case of merchandise. But the Tribunal has insisted that it has no jurisdiction to order such a reduction, so long as the standard revenue shows a deficiency. This is merely one of several instances of a legal interpretation being wrongly applied to an economic issue. Thus, while the Tribunal's interpretation of section 59 (4) has had no practical effect on those commodities which have had an alternative means of transport to turn to, and/or on commodities, the transportation charges of which constitute a small factor in the cost of production, it has weighed heavily on traffic the rail charges of which are an important item in the commodity's cost of production, and over

which the railways have been in a position to exert monopoly powers.

In one important respect the Tribunal has failed to perform its delegated function. During the debates on the bill, many contended that the key to rate reductions rested with railway management itself. Writing in *Modern Transport* in 1921, Sir George Paish maintained, "that traffic will not bear the high rates and fares" of 1913, and "that the remedy lies in increased efficiency in management and real economy in operation." Therefore section 58 (1) of the Act gave the Tribunal wide powers over the question of the efficiency of railway management. Such powers have been recognized by the Tribunal in that it has inquired into the question of railway management at each annual review of the standard revenue. But the form which this inquiry has taken is open to criticism. Instead of making an independent estimate of the imaginativeness and wisdom of managerial policy, it has been content to accept the opinion of high railway officials as to their own efficiency; and by doing so has permitted railway management to act as its own judge—the very thing it was instructed not to do. The criticism is not that railway management has been inefficient, but rather that the Tribunal has failed to accept its responsibilities under the Act. The following extracts from the *Proceedings* of the Railway Rates Tribunal are sufficiently interesting and significant to have merited an expression of opinion from the Tribunal. None was offered.

The first is the reply made by a high railway official to a question asked by a counsel for the iron and steel industry:

Q.—Have any of the railways considered how far the present charges tend towards an increase or diminution in the traffic?

A.—No, I think not. We have not been into that at all.<sup>18</sup>

The second is an extract from evidence given in answer to a question concerning railway investment in the road industry.<sup>19</sup>

Q. 795.—Is it a fact that this company is selling to you on account of the present position of the company, the insufficiency of the working capital and the necessary improvements in the design of the omnibuses which are necessary in order to make it a profitable concern?

A.—I do not know why they are selling.

<sup>18</sup>*Proceedings of the Railway Rates Tribunal*, 1929, p. 140.

<sup>19</sup>*Ibid.*, 1930.

Q. 805.—You are going to buy a company which was registered in 1926, which has a paid-up capital of £295,000 and no dividend has yet been paid?

A.—Yes.

Q. 806.—And I presume you will come forward in due time and ask this Tribunal to add to the standard revenue, to which you are entitled, a sum of five per cent. on that capital.

A.—Yes, according to what it *costs*.<sup>20</sup>

Despite the wide powers which the Tribunal was given over the maintenance of the standard revenue, their effectiveness was considerably limited by certain fundamental omissions. It was given no jurisdiction over the question of wages, although wages is probably the most important single item of expenditure. Thus, if the Tribunal felt that, in the interests of the standard revenue, charges should be reduced, the Wages Board could completely nullify its order by simultaneously ordering an increase in wages. Some connection certainly should have been made between the two bodies. Furthermore, the Tribunal was given no jurisdiction over the law of undue preference. Therefore, if it ordered a reduction in rates the Railway and Canal Commission could quite legally upset its decision, by ruling that such reduction amounted to an infringement of the law of undue preference. It also was given no power to challenge railway capital expenditure. Once the railways received parliamentary permission to increase their capital charges, the Tribunal was legally bound to increase the standard revenue under section 59, subsection (10), (a), (b), or (c).<sup>21</sup> These statutory limitations are more or less in the nature of theoretical criticisms, rather than practical obstacles, but nevertheless they must have had some check on the Tribunal's willingness to experiment—a necessary prerequisite to success.

Inasmuch as the standard revenue has never been earned, the experiment in linking charges and revenue has yet to be tested; but still it would appear that the policy of a net maintainable

<sup>20</sup>The scope of this essay does not permit a lengthy treatment of the question of ancillary businesses, but their relationship to the railways' capacity to earn the standard revenue is of the utmost importance. By Acts of Parliament, 1928, railways were permitted to enter the road transportation industry on a limited scale, and the Tribunal held that it was obligated to increase the standard revenue on a basis of the cost of acquiring such equipment, irrespective of its potential earning capacity. The effects on the standard revenue of mal-investment in the road industry are just becoming evident.

<sup>21</sup>See pp. 122.

reasonable revenue has proven impracticable. Such a standard is bound to run into innumerable difficulties under changing conditions. It assumed that it was possible to determine what revenue is maintainable, but owing to changes in the competitiveness of the market which increases or reduces traffic potentialities, changes in consumers' habits, population movements or the general operation of the trade cycle, changing wage levels which increase or reduce costs and lead to changes in consumer charges, changing price levels which equally affect costs, and the impossibility of forecasting monetary values which allow of reductions in interest charges, there is no such thing as a maintainable revenue.

It can be forcefully argued from the above treatment of the standard revenue that the machinery provided to increase charges so as to ensure the earning of the standard revenue has not resulted in any material rate increases being forced upon the railway users, because it was not a guaranteed revenue. But as time wore on and the real intention of the Act became obscured, railway shareholders and management began to look upon the standard revenue basis as being a guaranteed revenue; and began to clamour for special consideration if it were not earned. This special treatment has taken the form of a series of parliamentary enactments aimed at breaking down the anti-monopolist legislation which had grown up in the nineteenth century, and restoring the railways' competitive position in the transportation market. Much of this legislation can be definitely classified as pro-monopolist in character, naming the railways as the vested monopolist.

### III

Once it had been established that the motor vehicle was a more efficient and economical means of transportation for certain classes of railway traffic, and that the machinery provided by the Act of 1921 to maintain the standard revenue had been a failure, Parliament endeavoured to improve the railways' earning capacity. Its first attempt took the form of a series of Railway (Road Traffic) Acts, which were intended to increase the railways' bargaining powers. Under these Acts the railways were given the right to invest in established road concerns, and to operate vehicles of their own. But the results of the newly acquired powers proved disappointing. Instead of increasing their earning capacity, much of

the investment became an additional charge on the net revenue.<sup>22</sup> First, considerable capital was "sunk" in bankrupt omnibus companies, many of which had been highly capitalized.<sup>23</sup> Second, by 1928 the road transportation market had become over-crowded, and charges covered little more than costs of operation. Although such a margin of profit was suitable for the small road haulier who had little capital tied up in his business, and who was willing to accept a small remuneration on his investment, it was not a sufficient margin of profit for railways which, in the main, had acquired highly capitalized road concerns, and were obliged to earn 5 per cent on their investment.

Failing in its attempt to increase railway revenue, by improving their competitive powers, Parliament resorted to new tactics—curtailing the competitive efficiency of road carriers by introducing road regulations. Under the Road Traffic Act, 1930,<sup>24</sup> and its amending Act of 1934,<sup>25</sup> passenger fares were regulated. Under the Road and Rail Traffic Act of 1933<sup>26</sup> freight services were regulated.

In 1929 the Ministry of Transport set up a Commission to report on passenger fares and services in the road industry; and the recommendations of the committee were embodied in the Road Traffic Act of 1930. Certain provisions of this Act constituted a considerable curtailment of the competitive advantages which omnibuses enjoyed over the railways in regard to passenger traffic. Not only were they required to impose higher passenger fares, and to introduce a greater degree of stability and uniformity into their rate structure; but, in addition, compulsory running of particular services was stipulated, restrictions on long-distance omnibus services were imposed, and prohibition against expanding facilities in the summer when demand was at its peak, and curtailing them

<sup>22</sup>The investment of British railways in many road undertakings bears a striking analogy to the Grand Trunk Railway Company's expansion policy from 1876 to 1895 under Sir Henry Tyler. For a typical example see evidence, *supra* p. 132.

<sup>23</sup>The Railway Rates Tribunal held that it had neither jurisdiction to prevent mal-investment of railway capital in road concerns, nor discretionary powers to withhold remuneration once the investment had been made under statutory authority.

<sup>24</sup>20 & 21 Geo. V, ch. 43.

<sup>25</sup>24 & 25 Geo. V, ch. 50.

<sup>26</sup>23 & 24 Geo. V, ch. 53.

in the winter when demand was falling off, was enacted. The effect of these provisions was to prevent omnibuses adjusting charges, and varying services according to demand, the policy which, to a large extent, had been responsible for their prosperity. In one other respect the Act has been of significance to the development of the omnibus business—entrance into the industry was to be closely regulated, and existing omnibus operators were to be given preference over newcomers.

The Road and Rail Traffic Act, 1933, enacted the recommendations of the Salter Conference which had been set up in 1932 to report on the road-rail problem. The provisions of this Act instituted a system under which no person was to be allowed to operate a motor vehicle for the carriage of goods without being licensed to do so. Road carriers were divided into three classifications known as "A," "B," and "C" licence holders. Holders of "A" licences were authorized to operate their vehicles as *public* carriers for hire or reward or for the carriage of goods essential for their business as carriers of goods; "B" licence holders, or *limited* carriers, were entitled to employ their vehicles for the carriage of goods for their own business, or for hire and reward, but were subject to any conditions which the licensing authority<sup>27</sup> saw fit to impose; and "C" licence holders, or *private* carriers, were entitled to use their vehicles only for the carriage of goods for, or in connection with, any trade or business carried on by them.

The rights of "B" licence holders were left to the sole discretion of the traffic commissioners, who had power to limit the scope of their activities to certain areas, classes of traffic, specific individuals, and/or any other limitation which they saw fit to impose. The Commissioners were also given absolute discretion over the expansion of the industry with regard to "A" and "B" carriers. They were not only empowered to preclude new applicants from entering; but could also prevent those already in the industry from expanding their business. Two conditions had to be established before the Chairman of the Traffic Commissioners would either

<sup>27</sup>The Road Traffic Act of 1930 divided the country into twelve areas and appointed three traffic commissioners who were to be responsible for the issuing of public passenger service vehicle licences. The Road and Rail Traffic Act of 1933 extended their powers by making them responsible for the new licensing system. They not only had power to issue or refuse an applicant a licence for the carriage of goods, but could also attach conditions to certain types of licences.

grant a licence to a new applicant, or allow an existing carrier to enlarge his business. First, it had to be proved that an entirely new demand for facilities had arisen; and, second, that existing facilities were not adequate to cope with the demand.<sup>28</sup> The fact that the applicant could supply facilities more cheaply or of better quality did not constitute grounds for the granting of a licence. Nor was it sufficient proof to show that the demand for facilities in the future would justify an increase in the supply of facilities.

The effect of both these Acts, passed in the interests of the standard revenue, has been to create a road-rail monopoly over the transportation market at the expense of the shipper and those persons desirous of entering the industry. The shipper has been obliged to accept an inferior quality of service, or an increase in charges, or a combination of both of these factors. In effect it has amounted to a nullification of "consumers' preference." The regulation of "A" and "B" operators has stabilized the number operating under these licences, whereas the demand for "C" licences which have been uncontrolled has increased considerably.

The 1933 Act not only introduced road regulation on a considerable scale, but it also provided for a further relaxing of existing railway regulation, by introducing an entirely new type of charge, the "agreed charge." An agreed charge is a negotiated rate, arising out of a contract between the railway and individual trader concerned. In determining the rate such principles as mileage, classification, weight, and value are dispensed with, and an average charge is struck. Since these charges have become operative there have been a variety of agreements, but the following principles for determining the agreed charge have become fairly standard. The railway and trader strike an average rate after comparing the trader's transportation costs for a busy period of the year with those for a slack period of the year; or the rate is arrived at by considering the average per ton of consignment, or per package. In the majority of the cases the basis used has been some average, but the rate quoted by alternative means of transportation has also been a useful determinant. For the duration of the agreement the same charge is made for long and short distances, expensive or cheap consignments, and heavy or light commodities. Agreed charges allowed railways to construct their rates on quite a different

<sup>28</sup>For a full analysis of this aspect of the Act see G. J. Ponsonby, "The New Conditions of Entry into the Road Haulage Business" (*Economica*, May, 1937).

basis from that laid down in the Act of 1921 and gave them very considerable additional freedom. By permitting discrimination this Act departed from the historical trend of British railway regulation.

Railway earnings improved slightly in the years immediately following the passage of the Road and Rail Traffic Act of 1933, but not on the scale anticipated by either Parliament or the railways. The railways still attributed this to the unequal competitive conditions existing in the two branches of the transportation industry. They criticized the Act of 1930, because it had omitted to require omnibuses to publish their schedule of fares; they contended that because the Act of 1933 had failed to give the Commissioners power to regulate road hauliers' charges, road charges were still out of control; and they resented the publicity created as a result of their having to obtain the consent of the Railway Rates Tribunal for each "agreed charge." These factors gave rise to the Transport Advisory Council's report on rates and services, and to the railways' "Square Deal" campaign.

The first of these, the 1937 report of the Transport Advisory Council on rates and services, recommended an extension of the regulations provided by the Acts of 1930 and 1933, by declaring "that all forms of transportation should, where practicable, be rate-controlled, with publication and non-discrimination."<sup>29</sup> This, however, failed to satisfy the railways. Paragraph (2) of the recommendations suggested "that before proceeding further, opportunity should be afforded for the road hauliers to build up a rates structure for their own industry." The railways' rate structure had been a product of years of experimentation, and the railways were unwilling to accept a recommendation which would involve a similar lengthy period of trial and error. What they desired was an immediate corrective to their problem. Then with regard to compulsory publication of road rates the report did little more than express a half-hearted opinion, rather than formulate a definite recommendation. Dissatisfied with the report the railways launched their "Square Deal" campaign, in which they demanded the immediate repeal of all statutory railway restrictions, particularly those relating to the publication of rates and the law of undue preference.

<sup>29</sup>*Transport Advisory Council—Report on Service and Rates, 1937, p. 3.*

A Committee<sup>30</sup> was appointed by the Transport Advisory Council to consider the railways' appeal. It sat for four months and in April, 1939, presented its report. After reviewing the historical background of the road-rail problem, and considering conditions as they existed in 1939, it recommended a virtual restoration of the railways' freedom of contractual powers in regard to rates. Section 32 of the report recommended the immediate repeal of the railways' obligation to maintain a classification basis; to quote standard, exceptional, and agreed charges; to publish their rates; and to adhere to the law of undue preference.

Despite the scale on which railways were to be relieved of their statutory obligations, no recommendation was made either to repeal the powers granted the railways to operate road vehicles by the Acts of 1928, or to abolish the restrictions placed on the road industry in the Acts of 1930 and 1933. In fact, positive recommendations to the effect that the provisions of these Acts, with certain exceptions, should remain in force were made.<sup>31</sup>

What, then, was to be the railways' *quid pro quo* for the restoration of their freedom of contract? They first of all agreed to abandon any claim which they had, under the Act of 1921, to earn the standard revenue. But in view of the standard revenue *débâcle* this could hardly be considered an adequate *quid pro quo*. They further agreed to provide the public with adequate facilities at a "reasonable" price. Mindful of the meaningless standard which the common law doctrine of an implied agreement to provide facilities at a reasonable price had produced, the report specifically defined what was to constitute a reasonable charge, by enacting<sup>32</sup> the following conditions as a guide for determining the reasonableness of a charge:

- (a) Whether or not the charge is detrimental to the public interest;
- (b) variations in the value of currency;
- (c) the cost of affording the service or services in respect of which the charge is made;
- (d) the existence of any alternative or competitive transport facilities for the conveyance of the merchandise in respect of which the charge is made; and the charges made for the carriage of like merchandise by such alternative means of transport;

<sup>30</sup>With two important exceptions, the consumer and the small independent road haulier, the Committee was fairly representative.

<sup>31</sup>*Report on the Proposals of the Main Line Railway Companies as to the Conveyance of Merchandise by Rail (1939)*, sections 32, (v), (ix), 40.

<sup>32</sup>*Ibid.*, section 37 (vi).

(e) the effect of the charge on the financial position of the parties concerned, either generally or individually;

(f) the charge made to other traders for the carriage of like merchandise if it affects the trader concerned.

Although the railways refused to agree to any repeal of the Road and Rail Traffic Act, 1933, they did agree to certain concessions being made to *existing* road hauliers holding powers of operation under "A" and "B" licences. Section (4) paragraph (11) of the report provided that railways

will not raise objection during the ensuing two years after they have been given their freedom whether the application is for:—

(a) the renewal, without alteration, of *existing* "A" or "B" licences:

(b) the granting to *existing* hauliers of "A" licences for additional vehicles:

(c) the granting to *existing* hauliers of additional "B" licences for vehicles whose operations are limited to a radius not exceeding 25 miles.

The report completely ignored the rights of those individuals who were outside the road industry, and who might be desirous of entering it. It also failed to consider the effect which its recommendations would have on the user of transportation services. By refusing to repeal the regulations which the road Acts of 1930 and 1933 imposed on the road industry, while at the same time abolishing all restrictions against the railways' powers of exploiting their new monopoly position, it laid the user open to all the injustices of the nineteenth century. Analysing the recommendations of the report, Dr. O. Kahn-Freund states that "there are some who think that the 'Square Deal' does not mean the substitution of free competition for anti-monopolist hindrances, but a rail-cum-road monopoly, not sufficiently curbed by legislative safeguards in favour of other carriers and the trading community."<sup>33</sup>

The recommendations were unanimously approved by the railways and existing road operators; but international events prevented them receiving parliamentary sanction. Upon the outbreak of war on September 3, 1939, the government took over the railways, and appointed an executive committee of railway managers to conduct their operation. The financial agreement which the government made with the railways will now be considered.

<sup>33</sup>O. Kahn-Freund, "The Report of the Transport Advisory Council on the Square Deal Dispute" (*Modern Law Review*, Oct., 1939, p. 143); also see A. Plant, "Road and Rail Co-ordination Fallacies" (*Spectator*, Jan. 6, 1939, pp. 13-14).

## IV

The terms of the financial agreement between the government, the four main line railway companies, and the London Passenger Transport Board,<sup>34</sup> resolved themselves into three basic features. First, it provided that the net revenue of the five undertakings were to be credited to a pool, and redistributed in agreed proportions between the companies. The proportions were to be those distributed between the minimum sums *guaranteed*<sup>35</sup> to the companies by the government. These minimum guarantees which form the second feature of the scheme were to be equal to the average net revenue for the three years 1935-7 in the case of the railways, together with the 1939 net revenue in the case of the London Passenger Transport Board. The third feature of the agreement provided for the sharing of any excess of net revenue over £40 million minimum guaranteed by the government. Any excess up to £3.5 million was to be retained by the pool, and divided between the five undertakings in the same proportions as laid down for the division of the minimum guaranteed revenue. Any excess over £3.5 million was to be shared equally with the government until a sum of £28.5 million was reached, at which point the railways' share was to cease, and all further net revenue was to be retained by the government. The maximum potential revenue for any one undertaking was, therefore, to be its standard revenue as defined under the 1921 Act, in the case of the railways; and the amount necessary to cover  $5\frac{1}{2}$  per cent standard interest on the "C" stock in the case of the London Passenger Transport Board.<sup>36</sup> Consequently, under the agreement the railways were still entitled to

<sup>34</sup>This Board was created by the London Passenger Transport Act, 1933, to provide passenger services for London and its surrounding districts. It incorporated 9 different underground and main line railways; 61 omnibus companies; 12 Green Lines; and 16 tramways. Toronto's T.T.C. is a miniature L.P.T.B. For an analysis of this phase of Britain's transportation, see G. J. Ponsonby, *London's Passenger Transport Problem* (London, 1932), and the Rt. Hon. Herbert Morrison, *Socialization and Transport; The Organization of Socialized Industries, with Particular Reference to the London Passenger Transport Bill* (London, 1933).

<sup>35</sup>The total sum involved in these guarantees amounted to approximately £40 million.

<sup>36</sup>London Passenger Transport Board's "C" stock was given to shareholders in exchange for their equities held in the constituent companies, which the London Passenger Transport Board incorporated.

their standard revenue, provided they could earn it. It should be noted, however, that the total revenue necessary to provide these standard revenues, which themselves totalled £56 million, would amount to approximately £68.5 million under the agreement, because the government was to share in one-half of any surplus over £43.5 million.

Three other provisions of the Act are worth noting. First, the pool was to be charged with the cost of restoring war damage up to a limit of £10 million in any one year; but, since the actual cost might have been greater, the constituent undertakings themselves were left with the contingent risk of compensating the cost of damage over this figure.<sup>37</sup> Second, the agreement required the undertakings to repay the Exchequer a sum of between £2 million and £3 million after the minimum revenues were exceeded. Finally, under the scheme the railways were to be protected against rising costs, and certain other war contingencies, by the provision of machinery to adjust rates, fares, and charges to war conditions. This point raises issues of vital significance to the companies, their staffs, and the transportation user.

The agreement "has been described as a compromise, which reduced the potential earnings of the undertakings, and provides minimum returns. It is a compromise, however, which is unmistakably favourable to the companies and their shareholders."<sup>38</sup> By contrasting the terms of this agreement with those of the scheme of 1914, let us analyse the position of railway shareholders, labour, and consumers under war conditions.

The 1914 agreement compensated shareholders on a basis of net earnings for the year 1913, which, as has been pointed out, was an abnormally prosperous year for the railways. Therefore, certain members of Parliament suggested that the 1940 agreement should follow precedent and adopt the net earnings of 1938 as the basis for war compensation. But the railways objected to such a basis, because railway earnings had been extremely low in 1938,<sup>39</sup>

<sup>37</sup>As a result of the widespread air raids over Britain since June, 1940, this provision was amended on December 11, 1940. It is now the government's intention to deal with a compensation of damaged railway property under the comprehensive scheme which is being devised for all property. Therefore, the railways have been absolved from their risk under the agreement.

<sup>38</sup>*Economist*, Feb. 10, 1940, p. 254.

<sup>39</sup>See *supra*, p. 124.

and traffic had begun to recover considerably in 1939.<sup>40</sup> Parliament, therefore, disposed of the net earnings of 1938 as a fair basis, and accepted in its place a three-year average covering the years 1935-7.<sup>41</sup> This basis, including the London Passenger Transport contribution, amounted to approximately £40 million. But had the 1938 net earnings been chosen, the minimum guarantee would have been only £32.5 million; and had an average covering 1936-8 been employed, it would have been £38.5 million.

The following table shows the annual average earnings of ordinary shareholders for the period 1936-8; and 1938.

	1936-8 ( <i>per cent</i> )	1938* ( <i>per cent</i> )
London Midland and Scottish Railway	0.3	0.0
London and North Eastern Railway..	0.0	0.0
Great Western Railway.....	2.5	0.5
Southern Railway.....	0.0	0.0

\*In 1938 preferred shareholders in both the L.N.E.R. and S.R. were not fully remunerated.

The following table gives an indication of what the terms of the 1940 agreement meant to the shareholders as compared to their earnings in the above table. It illustrates the three stages of the division of revenue beginning with the minimum of £40 million, proceeding to stage II, at which revenues reach £43.5 million, and finally reaching stage III, at which the constituent undertakings earn the standard revenue.

From this very brief analysis of the shareholders' position under the agreement, we may safely conclude that they have received generous treatment.

Railway labour has also benefited from the agreement. Labour Unions have been active in demanding a full share of any benefits which the railways have received under the Act;<sup>42</sup> and the railways

<sup>40</sup>It is interesting to note that the railways also contended that net revenue is not necessarily the only controlling factor in a scheme of compensation. This is, of course, diametrically opposed to their submissions in 1914 and 1921.

<sup>41</sup>This was a considerable improvement on the most popular market suggestion, which was a three-year average covering the years 1936-8.

<sup>42</sup>It has been estimated that for the first 32 weeks of the war, working costs, an important item of which is labour costs, would increase by £26,750,000. It is interesting to note that, upon the outbreak of war, the railways agreed to make up the difference between army pay and railway wages to employees serving in the forces. This has been regarded as costs justifying increased charges.

	Stage I £40 million (per cent)	Stage II* £43.5 million (per cent)	Stage III £68.5 million (per cent)
<i>L.M.S.</i>			
Ordinary....	1.0	2.3	8.1
<i>L.N.E.R.</i>			
2nd Pref.....	1.2	2.5	4.0
Pref. Ord....	0.0	0.0	5.0
Def. Ord.....	0.0	0.0	4.7
<i>G.W.R.</i>			
Ord.....	3.3	6.6	8.1
<i>S.R.</i>			
Deferred....	0.8	3.2	3.2

\*In view of the provision permitting the railways to adjust rates to meet increased costs, and the amendment relieving them of risk arising out of war damage, the railways have been released from all financial risk during the war. It is very unlikely that net earnings will fall below £43.5 million.

have been just as alive to employ the protection afforded them under the agreement by increasing charges to meet increased costs.<sup>43</sup>

In contrast to the favourable position which railway ownership and labour are enjoying under the agreement, the railway user's lot has been one of slower and less frequent services, crowded facilities, and increased charges; and, therefore, from their viewpoint, the agreement represents a vicious piece of legislation. Under the Act of 1921, the railways' right to adjust their charges was a right enjoyed under highly competitive conditions; but the provision to adjust charges under the 1940 agreement, in accordance with variations in cost, set up machinery which will almost certainly result in increased revenue because under present war conditions railways are enjoying a virtual monopoly over the transportation market.<sup>44</sup>

Both the agreement of 1914 and the Act of 1921 assured the consumer a certain degree of protection. The 1914 scheme stabilized charges at the pre-War level; and the 1921 Act provided

<sup>43</sup>The government went to great lengths to devise a perfect rationing scheme as a means of preventing inflation creeping into Britain's war-time economy. But by enacting the railway agreement it made possible high profits, encouraging demands for high wages, which in turn has resulted in increased charges—the inflation spiral.

<sup>44</sup>Since the outbreak of the war, charges have increased by 27 per cent.

that 80 per cent of all net earnings over the standard revenue should be used to reduce rail charges. But the present agreement permits railways to adjust charges at the expense of the consumer; and the amount necessary to earn the standard revenue is £12.5 million above the 1921 figure.<sup>45</sup> In view of the high degree of monopoly in the market, it is not at all improbable that the maximum standard will be reached, at a considerable burden to rail users.<sup>46</sup>

To add insult to injury the consumer's right to appeal against unreasonable rate increases has been abolished under the agreement. Their fate rests in the hands of the Minister of Transport.

Therefore, to a very large extent, the agreement has presented the railways with an ideal scheme for exploiting rail users to the full.

## V

Summing up, we may conclude that the object behind the Railways Act, 1921, the majority of post-War transportation legislation, and the agreement of 1940, has been to protect railway investment. The purpose of this essay has not been to consider the "pro's" and "con's" arising out of such a policy, but rather to appraise the means used by the government to attain its end. If it felt that railway investment deserved special consideration, and that a measure of protection was merited by railway shareholders, then it should have obtained its object by a direct government subsidy to the railways rather than by introducing legislation which has had the effect of increasing charges to rail users, and stifling new technical invention which found itself capable of providing transportation facilities at lower costs, and the operators of which were willing to share its advantage with the general public.

<sup>45</sup>Road transportation has practically ceased as a railway competitor. This is due to three factors. First, the government requisitioned a large proportion of Britain's motor-vehicles for war purposes; second, black-out conditions have reduced the industry's operational efficiency; and third, petrol has been strictly rationed and that which has been obtainable has doubled in price.

<sup>46</sup>See *supra*, p. 140.

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## RECENT DEVELOPMENTS IN BALANCE OF INTERNATIONAL PAYMENTS STATISTICS

HERBERT MARSHALL

ONE of the innumerable effects of the war on Canada has been to achieve improvements in certain statistical fields which, though long overdue, might have been delayed for a considerable time but for the war-time urgency for the most accurate information obtainable. Statistics connected with the Balance of International Payments have been affected by these circumstances to a marked degree. With the comprehensive control exercised by the Foreign Exchange Control Board over the financial aspects of international transactions it was inevitable that statistical data should be available in variety and volume unobtainable in peacetime. The information which is being gathered to aid in the control of foreign exchange will be a guide to statisticians of the Canadian Balance of International Payments long after the war has ended or the need for control of foreign exchange has ceased to exist.

Apart from the data being collected in the course of the administration of the Foreign Exchange Control Order important improvements have been made in the statistical recording of two of the most important items which appear in the balance of payments statement, viz., those relating to tourists and foreign trade. It is with these improvements that the present paper deals.

It is, of course, at the customs ports that the raw materials for trade statistics are first collected. The primary interest of the customs officer must necessarily be administrative rather than statistical. Figures which are given to him by those who make out export or import forms may be quite satisfactory from an administrative point of view and yet be lacking in so far as yielding an accurate statistical picture of the monetary value of Canada's imports and exports is concerned. Moreover, it is not to be expected that the customs officer will understand the uses which will be made of his statistics apart from their value for revenue purposes; hence he will not call in question specific entries which may be satisfactory for his purposes though not for good trade statistics. To

achieve the best results, customs forms to be filled out by the business public and instructions for completing them must be drawn up co-operatively by those who administer the Customs Act and those who administer the Statistics Act. The statistical point of view must be recognized as being so important that it will be given its due when drafting forms or instructions for their completion.

In Canada the importance of the statistical point of view has in recent years been fully recognized by the Customs Branch of the Department of National Revenue. A tangible proof of that recognition was the transfer of its statistical section to the Dominion Bureau of Statistics. This meant that the compilation of the basic data of trade statistics came under the immediate direction of the Dominion Statistician. More was required to achieve the highest possible degree of accuracy in this field. The most perfect method of compilation and tabulation will not ensure accuracy if the basic data are at fault.

Work on the Canadian Balance of International Payments and in other fields had brought to light certain weaknesses in the basic figures of export and import values, and it was suspected others existed. These arose in part from the fact that recorded values of imports were for duty purposes rather than purporting to be the actual monetary receipts for imports. Special studies were instituted in 1939 to ascertain the nature of the deficiencies in trade statistics from the point of view of a record of real monetary debits and credits. The conclusions reached may be summarized as follows: When making out customs entry forms exporters were under instruction to declare the domestic price at the time and place of shipment. This instruction in itself contained an important source of error if it was intended that export statistics should measure the actual credits accruing to Canada for goods sold to other countries. Since there is frequently a difference between the export and domestic price of the same commodity, the domestic price almost invariably being higher in such cases, where domestic prices were shown in the export forms the total amount shown as being received by Canada for exports was exaggerated.

It was found, however, that the practice of exporters in completing forms gave rise to more important discrepancies between values shown in trade statistics and actual monetary receipts for exports. While the coders of export entries were in the habit of questioning them if values seemed out of line with certain levels

or standards which had been set up by experience, nevertheless the information available was quite inadequate to permit of anything more than a check on an occasional anomalous situation or in cases where it was specifically indicated that the values shown were c.i.f. In regard to the latter the check was insufficient because in the great majority of cases where c.i.f. values were shown there was nothing to indicate that they were such.

An actual sampling by means of a questionnaire sent to exporters showed the following results:

## METHOD OF DECLARING EXPORT VALUES

	<i>No. of firms</i>
f.o.b. Factory. ....	39
f.o.b. Factory and f.a.s.*.....	2
f.a.s.....	16
c.i.f.†.....	14
c.i.f. and others.....	18
	<hr/> 89

\*f.a.s. means free alongside ship at Canadian ocean port. Does not include loading charges onto the ship.

†c.i.f. includes paid to foreign inland destinations or foreign port.

This table indicates that not only was there no consistent basis in the declaration of export values as between firms but in 20 out of 89 there was a lack of consistency in the practice of the individual firm. Of the 32 firms which might enter c.i.f. values only 2 entered the freight and other charges which would enable the coders to reduce the valuations to an f.o.b. factory basis. Moreover, it was not always clear even then if the freight shown included not only ocean freight and charges but also inland freight. It is probable that in two-thirds of the cases covered the export entry contained a valuation higher than the f.o.b. factory export price.

It is obvious that where such variety exists in the declaration of export values any calculation of the monetary receipts from Canadian exports is subject to an important margin of error. It is essential for accuracy that the basis of declaration be followed consistently. If the c.i.f. basis be chosen it is possible to estimate the freight and charges paid to other countries for transportation and handling the exports; by deducting this amount from the

total valuation, credits to Canada for goods exclusive of the services performed by Canada for transport, insurance and so forth can be ascertained. Or if the basis be f.o.b. factory, then the receipts by Canada for transportation and other handling services can be estimated separately. To secure accurate statistics, it is also necessary to remove the confusion between domestic and export prices in relation to domestic price at the time and place of shipment.

As regards imports it was found that there were numerous cases of over-valuation in the trade figures. Since duties are levied on imports, their valuation is subject to close scrutiny and the duty is applied to the invoice value less freight and charges. Over-valuations are due, therefore, not to a variety of ways of expressing values but to the practice of recording them from a purely administrative point of view. The value which was used for the purpose of compiling trade statistics was the value for duty. Owing to customs rules and regulations, this frequently represents a higher monetary figure than the amount which is actually paid for the goods by the importer. Among the common sources of this disparity are the following:

- (1) Increase of the invoice value, for purposes of ordinary duty on goods not of a class or kind made in Canada.
- (2) Increase of the invoice value for the purpose of special duty.
- (3) Increase of the invoice value by the application of arbitrary valuations.
- (4) Increase of the invoice value by the conversion of foreign currencies at higher rates than the current market rate.
- (5) Non-allowance of freight deductions allowed by the exporter to the importer.
- (6) Use of a value different from that of the invoice in cases where price changes occur between the time of purchase and time of export.

Two other sources of differences between values as compiled and values representing actual payments may be mentioned. One group of entries has to do with imports on consignment. In many cases the amount which will be remitted to the exporter in another country will depend upon what can be realized for the goods. Hence the value entered at the time of import may differ considerably from the amount finally remitted.

Another important group covers imports by an intermediary. Where intermediary merchants purchase goods from abroad, then sell and invoice these to a third party in Canada, the latter making the customs entry in accordance with the regulations in Customs Memoranda Nos. 273 and 740, the valuation shown is not the amount to be paid to the exporter in another country but the value as shown on the invoice from the intermediary to the third party subject to any amendments made for duty purposes.

With a view to the improvement of trade statistics, an Inter-departmental Committee set up for the purpose drew up certain recommendations which have been largely adopted and are now in operation. These recommendations included important changes in customs forms. In the case of B 13 export form the description of the value to be declared was changed from "Value at time and place of shipment" to "Actual amount received or to be received in Canadian dollars." In order to clarify for the exporter what value he is to show, the following notes appear on the face of the form:

Show above the actual amount received or to be received *in terms of Canadian dollars*, exclusive of all charges. (Any freight, insurance, handling, or other charges included in the selling price, must be deducted therefrom.) For conversion of other currencies into Canadian dollars, see Customs Memorandum D No. 106.

On overseas shipments direct from Canadian ports, estimate here

- (a) amount of inland freight from place of lading to port of exit (\$Can.)
- (b) Handling charges to and at the port of exit—if not incl. in (a)—(\$Can.)

The second note was for the purpose of obtaining the inland freight item for the Canadian Balance of International Payments.

As a basis for instructing the customs ports concerning how exporters were to fill in export forms the following memorandum was drawn up:

The amount to be shown is the actual amount received or to be received by the exporter, exclusive of all charges; that is to say, the amount received or to be received for the goods without additional charges for freight, insurance, handling, etc., from the point of sale.

Thus the value shown should never be the c.i.f. value because that would include not only the amount received or to be received for the goods but also rail and ocean freight, insurance and handling charges. Neither should it be the f.a.s. value unless the goods are actually sold for export where they are put on board ship.

In most cases the value to be shown will be the amount received or to be received f.o.b. factory or place of production.

In some cases, however, goods are handled by brokers or middlemen and stored at locations distant from the place where they are produced. If these are afterwards sold for export from the place where they are stored the value shown should be the amount received or to be received f.o.b. the place where stored and invoiced by the broker or middleman. For example, in the case of wheat purchased by a dealer in Montreal from Western Canada, delivered to and binned in elevators at and afterwards exported from Montreal, the value shown should be the amount received or to be received f.o.b. Montreal.

Charges including freight from point of sale to ocean port should be shown separately and not included in the amount shown as received or to be received.

The amount to be shown, of course, will be in all cases after deduction of trade discounts.

In the case of consignments where the amount to be received is not known the best estimate should be given of what the amount will be.

Any case where there is doubt as to the value to be shown should be referred to the Customs Division, Department of National Revenue, Ottawa, with full particulars of the transaction in question.

Where the amount received or to be received is in a currency other than Canadian it must be converted into Canadian dollars in accordance with the instructions given in Memorandum D No. 106.

The estimate of inland freight and handling charges is required only in the case of overseas shipments *direct* from Canadian ports. Do not report freight on overseas shipments made via a United States port, nor any freight on overland shipments to the United States or Mexico.

To reduce all export valuations to the desired basis, one other step is necessary. It is to ascertain the difference between consignment valuations where the amount to be received is not known when the customs entry is made and the amount eventually received. The procedure to be adopted here is to institute a system of following up on a sample basis.

To bring about similar improvements in statistics of imports changes were made in customs form B 1. While it remained necessary for administrative purposes to show the value for duty, a special column in the form was set aside for the purpose of showing a value for statistical purposes. To this column was appended the following note:

Show above the actual amount paid or to be paid in terms of Canadian dollars exclusive of all charges. (Any freight, insurance, handling charges, Canadian duties or taxes which are included in the purchase price must be deducted therefrom.) For conversion of other currencies into Canadian dollars see Customs Memorandum D No. 105.

As a basis for instructing the customs ports concerning how

importers were to fill in import forms the following memorandum was drawn up:

The use of column 5 on Import Entry Forms has been revised to show the actual amount paid or to be paid for the imported goods exclusive of all charges such as freight, insurance, handling charges and Canadian duties or taxes.

Thus the value should never be the c.i.f. value because that would include not only the amount paid or to be paid for the goods but also freight, insurance and handling charges.

The amount to be shown of course will be in all cases after deduction of trade discounts.

In the case of consignments where the amount to be paid is not known the best estimate should be given of what this amount will be.

Any case where there is doubt as to the value to be shown should be referred to the Customs Division, Department of National Revenue, Ottawa, with full particulars in regard to the type of transaction in question.

Where the amount paid or to be paid is in a currency other than Canadian it must be converted into Canadian dollars in accordance with the instructions given in Memorandum D No. 105.

As in the case of exports consignment shipments require a follow-up in order to ascertain the difference between the value entered in the customs form and the amount eventually paid.

Imports through intermediaries where the customs entry is made by a third party and at a value higher than what the intermediary pays to the foreign exporter, have to be covered in some special manner. A form to be filled in by the intermediary showing the amount he must pay to the foreign exporter with means of identifying the form filled in by the third party is under consideration. This or some similar procedure would permit deductions being made from import figures as compiled to reduce them to the basis of amount paid or to be paid.

While import valuations continue to be published on the value for duty basis, differences between these values and the amount paid or to be paid are also being tabulated so that the necessary corrections can be made for Balance of Payments purposes.

#### TOURIST STATISTICS

Estimates of tourist expenditures have been made in the Bureau of Statistics over a number of years. Unfortunately the data on which these were based left very much to be desired as regards accuracy of count and adequacy of sampling. The situation in this field of statistical effort resembled that in the field of

trade statistics to the extent that there was confusion due to the administrative and the statistical points of view. The count of tourists is made at the frontier ports by officers of the Customs and Excise Division of the Department of National Revenue and of the Immigration Branch of the Department of Mines and Resources. These officers are administering the customs and immigration laws. Their statistical records are a by-product of that function and are coloured by their administrative point of view. While they may have served perfectly the needs of their own particular field, in some respects they were inadequate and misleading for statistics of the tourist trade. Moreover, administrative needs were well served even though a lack of uniformity in compiling statistics existed in different sections of the frontier, but from a purely statistical point of view this lack introduced errors into the tourist estimates.

In addition to the difficulties concerning the count of tourists, there was also that of obtaining an adequate sample of expenditures. Post-card questionnaires were given out by both customs and immigration officials to be completed and mailed by the tourist. In spite of the thousands of cards distributed the sample which was secured was less than 1 per cent. This was quite inadequate to represent fairly such a heterogeneous universe as that which embraces the movement of visitors across the international boundary and overseas. To secure a reliable estimate of tourist expenditures, it was necessary to clarify and improve the count of visitors and secure a wider sample of expenditures. Experience this year has shown that the count was an even greater source of error than the inadequate expenditure sample.

Early in 1940 an Interdepartmental Committee was formed to explore the situation, consisting of representatives from the Bureau of Statistics, Customs Division, Immigration Branch, and the Foreign Exchange Control Board. Its recommendations were implemented and the way was opened for a much better basis for estimating tourist trade. To this effort the Customs Division and the Immigration Branch gave their full co-operation, and the results have been surprisingly good.

A simplified procedure was adopted for Canadian tourists by issuing a new automobile permit good for one year. In addition, however, customs officers were instructed to complete an E-60-A form for each Canadian returning to Canada by motor car which

contained questions as to length of stay and expenditure in the United States. Owing to special local conditions at some ports on the land border between United States and Canada some local variations to this rule were made, but through these E-60-A slips which are sent by the customs officials to the Bureau of Statistics both count and expenditures of most Canadian travellers by automobiles are available. A sample of less than 1 per cent in expenditures is replaced by a record of 90 per cent or more.

Visitors from the United States by motor who stay more than forty-eight hours, and those who enter at one port and leave by another even though they stay less than forty-eight hours, must have an E-50 permit. In this permit there was inserted an expenditure slip which must be torn out when the permit is cancelled and sent by the customs officials to the Bureau. The completion of this slip is optional but the co-operation of customs officials has secured a sample of over 50 per cent for this class of tourist.

Immigration officials continue to give out expenditure post-cards but in larger numbers than formerly. All Canadian tourists by rail, steamer, through bus, or aeroplane returning to Canada during one full week in each month are given a post-card. The result has been a larger sample than formerly for these classes of tourists. For American visitors similar cards are given out by United States officials.

One other improvement was an arrangement made with Customs and Immigration to have an officer from the Bureau study procedure and local peculiarities at the customs ports. Those in Ontario, Quebec, and the Maritime Provinces were covered and an abundance of data were collected which are essential if the statistics received from the ports are to be correctly interpreted.

Despite the improvements in statistical procedure described above, the basis for estimating tourist expenditures still contained many inadequacies. For example, no samples of expenditures were obtained from the non-permit forty-eight hour class of visitor from the United States. As regards count the difficulty remained of making the port records kept from an administrative point of view into an accurate statistical picture of tourist movements free from duplications and other anomalies. The task of securing uniformity of procedure in so many ports strung across the whole breadth of

the international frontier suggested that a radical change of organization was desirable.

As a result of conferences between the Customs Division and the Bureau of Statistics an important change in procedure has been agreed upon. This involves the following:

(1) It is designed that a new simplified E-50 permit will replace that now in use covering tourist motor traffic from the United States which requires a permit. The new form will be in duplicate. When the tourist enters Canada, the permit is made out and the original will be mailed to the Bureau of Statistics where it will be filed by the port serial number. When it is cancelled the duplicate will be mailed to the Bureau and matched with the original. The Bureau will keep a constant check on cars which have overstayed the period on their permit and advise Customs. Each permit will contain information concerning length of stay, number of people in car, home address of tourist, class of tourist (summer resident, commuter, local, ordinary tourist, commercial vehicle, etc.), and an optional question regarding expenditure.

(2) Each non-permit visitor from the United States (forty-eight hours within jurisdiction of port) will be given a small form (E-49) which he must surrender to the Customs officer when the tourist enters Canada. On this the visitor will state the number of people in his car and there is also an optional question concerning his expenditures.

Many visitors from the United States are given the privilege of crossing the border a number of times on one E-50 permit. Such include Americans with summer residences in Canada, locals who live close to the border and come to Canada for shopping, amusements, visiting, and so forth, and Americans who come over to Canada daily to work. No. E-49 will be given to the tourist for these repeat visits, but the customs officer will make a check mark on an E-49 to indicate a repeat visit by someone in possession of an E-50 permit, and mail it to the Bureau. Expenditures will be shown when the E-50 is cancelled. Thus duplication in count and in expenditure estimates will be avoided.

The adoption<sup>1</sup> of this plan will bring about many improvements in tourist statistics. Among these are the following:

(1) The count of tourists by automobile will be made in the Bureau instead of the customs ports. Since the original documents

<sup>1</sup>It was instituted April 1, 1941.

will be centralized in the Bureau the information can be compiled on a uniform basis.

(2) The information on the permits will be punched on hollerith cards and cross-classifications will be possible which should throw much light on tourist movements. For example, it will be possible to show the relative importance of various tourists classes such as summer residents, in-transit visitors, travelling tourists, and so on. Hitherto statistics of the tourist movement have been in global figures. These would have much more significance if they were broken down into classes and the expenditures of each class shown separately.

Some millions of visits of Americans to Canada by motor car are not strictly tourist movements at all. For example, there is a continuous stream of in-transit traffic between Niagara Falls, Fort Erie, and Windsor because it is a convenient way to travel from the Eastern States to those farther west. There are numerous in-transit movements in Quebec. As a rule these do not result in much expenditure in Canada. Then there are the daily trips made by thousands of Americans with summer residences in Canada (as, for example, along Lakes Erie and St. Clair) to their work in the United States. These repeat trips exaggerate the value of the tourist movement. If total expenditures for the season in Canada are shown when the E-50 expires, the intermediate repeat trips simply represent duplication. Again an important section of recorded visits comprises visits of locals. That is to say, there are communities on the border, as for example in Quebec, where those living adjacent to the border on both sides of it form almost a single community. Particularly in normal times there is a constant movement back and forth. For a great deal of it expenditures are very small and in many cases there is just a visit with no expenditure. Such traffic should be put in a class by itself and a special average expenditure much smaller than a general one applied to it. When in-transits, locals, and commuting summer residents are deducted from the total tourist movement, then the extent and importance of the motoring tourist class proper are thrown into clear relief. It will not be until the new plan has been put into operation that this will be possible.

(3) All of the automobile tourist traffic from the United States will be covered by these new E-50 and E-49 forms. (During 1940 no information concerning expenditures was obtained from the

forty-eight hour non-permit American visitors.) This means that a very large sample of the expenditures of both Canadian and American motor tourists will be secured. The arrangement also lends itself to securing a sample of the expenditures of those who travel by bicycle, motorcycle, taxi, bus, and trucks.

(4) Since original records will be held in the Bureau, containing the names and addresses of tourists from the United States, it will be possible to follow up those which are obscure and lists will be available from which inquiries on a sampling basis can be instituted designed to throw light upon important aspects of tourists' movements which are now only known vaguely.

One of the chief benefits of the arrangements which have been developed during 1940 is the more intimate and close co-operation between the Bureau and the customs ports. There is being built up a clear picture of conditions at each port which will be of great benefit in interpreting a great variety of situations which prevail across the long Canadian frontier. Already this new knowledge has led to greater accuracies in count. Many serious duplications from the statistical point of view have been brought to light and corrected. On the other hand, some tourist movements which had not previously been included in estimates were discovered.

With regard to tourists by rail, boat, bus, aeroplane and pedestrians, information will not yet be as satisfactory as that for visitors by motor car. However, some improvements have already been made and others are contemplated. The expenditure data on the American end of the traffic are collected by the American immigration authorities, and an arrangement made between the Dominion Bureau of Statistics with officials in Washington early in 1940 made provision for a much wider distribution of expenditure post-cards.

The Canadian Immigration authorities make a count of all persons returning (Canadian) and tourist entries (American) by boat, rail, etc. They give out expenditure post-cards to Canadians returning by rail, boat, aeroplane, and through bus. As already stated, the numbers of post-cards given out were increased considerably in 1940. Immigration makes available the count of Canadians returning in the categories rail, boat, through bus, aeroplane, and highway-ferry. The count of rail passengers is quite accurate for statistical purposes, also that for aeroplanes and through buses. As regards that for boat passengers, there are

numerous anomalies giving rise to both duplication and omissions which will have to be remedied before the group is statistically satisfactory. The remaining group includes all Canadians returning by highway or ferry. The automobile traffic which it includes is already covered by customs data. Through bus traffic is given in a special category. Deducting these two groups, the remainder covers local bus and pedestrians. Information concerning local bus traffic is available from other sources so that the pedestrians can be segregated. At present little information is available concerning the expenditures of those who travel by local bus or of pedestrians. It is hoped to improve the information by special inquiry.

While it will take another year at least before tourist statistics can be put on the improved bases outlined in the foregoing, enough has already been learned through the additional information available to prove that previous estimates of expenditure have been too high. For example, it is now estimated that the net credit to Canada, originally estimated at \$166 million for 1939, should have been about \$78 million.



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